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RIIO-2 Network Price Controls Draft Determinations Impact Assessment			
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We published our draft Impact Assessment for the next Network Price Controls for the gas distribution, gas transmission and electricity transmission sectors in June 2019. It assessed the expected impact of the methodologies, confirmed for these sectors in our May 2019 Sector Specific Methodology Decision, on consumers and network companies. We said we would update the draft Impact Assessment at Draft Determinations. This document provides that update.

Whilst most of the analysis presented in this document refers to the gas distribution, gas transmission and electricity transmission sectors, we also describe impacts for the Electricity System Operator (ESO), where relevant and consistent with the other sectors.

Contents

Introduction

Purpose

This Impact Assessment (IA) updates the draft Impact Assessment[1] (draft IA) published in June 2019 in support of our RIIO-2 Sector Specific Methodology Decision.

The key focus of our June 2019 draft IA was to assess whether the regulatory options considered for the next regulatory period would provide good value for consumers. The expected impact of those options on consumers and network companies were measured relative to the RIIO-1 counterfactual, and were based on a set of assumptions.

This IA updates the analysis presented in the draft IA. It reflects the actual values and approaches, as proposed in the Draft Determinations[2], relative to assumptions and approaches we would have set under the RIIO-1 counterfactual. It also assesses the customer bill impacts of these proposals on the same basis and presents a new assessment of the distributional impact on consumers in line with our updated IA Guidance.[3]

Unless otherwise specified, our analysis is limited to the gas and electricity transmission, and gas distribution sectors. The RIIO-2 price controls for these sectors will run from 1 April 2021 until 31 March 2026.

Where relevant and consistent with the analysis presented for other sectors, we have also presented impacts for the Electricity System Operator (ESO) in this document. These impacts relate, in particular to the cost of equity, cost of debt and switch to Consumer Price Inflation including Owner Occupiers' Housing Costs (CPIH). However, there are significant differences in the other building blocks of the ESO price control and the ESO analysis does not have a similar RIIO-1 counterfactual given the unique nature of a standalone ESO price control.[4] To aid the readability of this document, all other impact considerations to support decisions made for the ESO are included within our ESO-specific RIIO-2 publications[5], and these documents together form our assessment

[1] https://www.ofgem.gov.uk/system/files/docs/2019/06/riio-2_network_price_controls_draft_impact_assessment_0.pdf
[2] We decided in SSMD that option 3 was our preferred option. Because of that decision, in this document we are assessing the proposals described in the Draft Determinations published on 9th July.
[3] See https://www.ofgem.gov.uk/publications-and-updates/impact-assessment-guidance
[4] The numbers presented include the ESO and thus are included in calculating the total net present values on companies and consumers. We present figures for the ESO where possible and material. We do not have comparable numbers for the ESO for RIIO-1.
[5] See: RIIO-2 Draft Determinations – Electricity System Operator; Decision and Further Consultation August 2019; and Decision on Financial Methodology and Roles Framework October 2019

of impacts of implementing RIIO-2 for the ESO for the purposes of section 5A of the Utilities Act 2000.

We are publishing the IA in support of the RIIO-2 Draft Determinations. A detailed consideration of the rationale for each of the proposals has been set out in the suite of RIIO-2 documents published as part of our Draft Determinations. These other documents are available on our website and the IA should be read alongside them[6]. This IA provides an assessment of key impacts associated with these proposals.

Since the publication of the draft IA, there have been a number of external developments as well as refinements and changes to approaches used in our assessment in a number of areas. This IA considers these areas and, where possible, provides a quantitative assessment of the impacts on consumers and networks companies arising from these changes, in line with the requirements of our IA Guidance.

We have included indicative, quantified key direct and indirect impacts for key areas such as the allowed return on equity, the totex incentive rates, and efficiency adjustments, by comparing our Draft Determinations proposals to a counterfactual of carrying on RIIO-1 policies during the RIIO-2 period. Where quantification was not possible, we have provided a qualitative assessment.

We will review this IA at Final Determinations in December 2020.

Structure and content

This IA is structured as follows:

a) Chapter 1 describes what areas of the IA have been updated to reflect Draft Determinations proposals. It also includes a discussion of the new policy areas considered in our analysis;

b) Chapter 2 presents our updated analysis of the impacts on consumers and network companies of our Draft Determination proposals, including new areas of analysis;

[6] https://www.ofgem.gov.uk/publications-and-updates/riio-2-draft-determinations-transmission-gas-distribution-and-electricity-system-operator

c) Chapter 3 presents our estimates of the indicative bill impact, updated analysis of distributional impacts on different groups of consumers, and other impacts during the regulatory period;

d) Chapter 4 describes our updated analysis of impacts beyond the next regulatory period, including any impacts on the environment;

e) Chapter 5 sets out our view of the main risks and uncertainties associated with our updated assessment;

f) Chapter 6 presents a summary of our assessment, conclusions and next steps.

g) Appendix 1 presents a breakdown of the total impacts of changes in the cost of capital due to changes in the cost of debt and changes in the cost of equity.

Summary: Interventions and options

The draft IA considered four regulatory options for our Sector Specific Methodology for the RIIO-2 price control period:

- Option 1 - Do nothing (the counterfactual): Under this option, we would continue to apply the same tools and calibration as applied within RIIO-1.
- Option 2 - Recalibrated RIIO-1: We would retain similar mechanisms to RIIO-1 but revise certain areas of the regulatory package to reflect learning and evaluation.
- **Option 3 - Targeted changes (our preferred option): We would continue to use incentives to drive consumer benefit but would make more significant changes to certain areas where we identify the potential for increased benefit.**
- Option 4 - Alternative regulatory framework: Under this option we would move towards a regulatory framework which is closer to 'rate of return' regulation with limited upside incentive to match a low level of downside risk.

Option 3 reflects the methodology we have applied to the design of the price controls as confirmed in the May 2019 Sector Specific Methodology Decision (SSMD). Accordingly, we have only updated our approach for this option and the counterfactual ('option 1').

Our updated analysis reflects actual values and approaches proposed in the Draft Determinations relative to assumptions and approaches we would have set under the RIIO-1 counterfactual. The IA takes into account:

- decisions on methodology that have already been made but where the values, and therefore the quantified impacts, have been updated at Draft Determinations at a sector and/or company basis. This is the case for impacts relating to changes to baseline totex allowances and to key financial parameters, eg equity allowances, and indexation of Regulatory Asset Value (RAV) and allowances using CPIH.
- Draft Determinations proposals relating to changes to incentives, eg number and types of outputs and totex incentive rates. For these incentives, the methodologies and approach to quantification have been revised to take into account the impact on companies' revenues as well as adjustments to the counterfactual and to some of the assumptions used.
- New areas of analysis, reflecting changes to methodologies which have been applied at Draft Determinations. This includes the depreciation of gas transmission network assets, and efficiency adjustments.
- External developments such as targets for Net Zero and and new requirements as set out in Ofgem's updated IA Guidance.

The table below provides a summary of the monetised impacts of Draft Determinations proposals relative to the counterfactual. Results are presented in line with the Impact Assessment Guidance and Template as published on Ofgem's website[7].

[7] https://www.ofgem.gov.uk/publications-and-updates/impact-assessment-guidance.

Draft Determinations proposals - Monetised Impacts (£m)

Business Impact Target Qualifying Provision	Non Qualifying
Business Impact Target	Not Applicable
Net Benefit to GB Consumers Direct consumer Net Present Value (NPV) figures represent the direct impact on energy consumers compared to counterfactual over the next price control period	Direct benefits excluding switch to CPIH and deprecation: **£3,200m** (£3,175m to £3,224m) Direct benefits including switch to CPIH and depreciation: **£1,299m** (£1,274m to £1,323m)
Wider Benefits/Costs for Society Direct wider impacts include the direct revenue impact on network companies and administrative costs for companies compared to counterfactual over the next price control period	Direct only excluding switch to CPIH and depreciation: **-£3,333m** (-£3,264m to -£3,401m) Direct only including switch to CPIH and depreciation: **-£1,432m** (-£1,363m to -£1,500m)
Net impact The overall net effect includes the net impact on consumers and companies compared to counterfactual over the next price control period	Excluding switch to CPIH and depreciation: **-£133m** (-£89m to -£177m) Including switch to CPIH and depreciation: **-£133m** (-£89m to -£177m)

NPV is calculated over the next regulatory period (five years), from 2021/22 to 2025/26, using a discount rate of 3.5% (as per HM Treasury Green Book guidance). Costs and benefits are in 2018/2019 financial year prices.
Some costs and benefits are hard to monetise and others will arise beyond the next regulatory period. These are considered qualitatively.

We note that the switch from the Retail Price Index (RPI) to CPIH for indexation of the regulated asset value and allowed returns should be value-neutral to both investors and consumers in the long-run (consumers will be neither worse off nor better off). We recognise, however, that the switch will affect the timing of the repayment of the Regulatory Asset Value[8] (RAV), and that will result in reduced benefits to consumers within the next regulatory period. Similarly the change in the depreciation for gas transmission assets is value-neutral in the long run, but will result in reduced benefits to consumers within the RIIO-2 period.

Our estimates of costs and benefits for the totex incentive rates are indicative and subject to uncertainty, in particular in relation to how companies might respond to reduction of the incentive rate. We have undertaken scenario analysis to consider the impacts of different potential responses.

[8] The value ascribed by Ofgem to the capital employed in the licensee's regulated business (the 'regulated asset base'). The RAV is calculated by summing an estimate of the initial market value of each licensee's regulated asset base at privatisation and all subsequent allowed additions to it at historical cost, and deducting annual depreciation amounts calculated in accordance with established regulatory methods. These vary between classes of licensee. A deduction is also made in certain cases to reflect the value realised from the disposal of assets comprised in the regulatory asset base. The RAV is indexed to allow for the effects of inflation on the licensee's capital stock

Draft Determinations proposals - Hard to Monetise Impacts

We have performed a partial quantification for some of the components of Draft Determinations proposals while others are considered qualitatively. In particular, we have not quantified impacts arising from changes to competition, innovation and administration costs.

We consider that a large proportion of the monetised and non-monetised impacts we have identified will take place in the next regulatory period (RIIO-2, between 2021 and 2026).

We also considered impacts that may go beyond the next regulatory period. These arise from decisions that have long-term impacts. In particular:

1. Medium-term strategic impacts: these relate to asset resilience, competition, changes to the inflation rate, depreciation of gas transmission network assets and incentive rate.
2. Long-term sustainability impacts: these relate to investment, innovation and impact on the environment.

We identify that in some areas existing consumers will fund companies to deliver benefits that will be realised beyond the next regulatory period (for example investment in innovation).

Key assumptions / sensitivities / risks

Several impacts we analyse are difficult to quantify due to the lack of quantitative data or the nature of the mechanism considered. However, we have quantified the aspects that we expect to have the largest impact on companies and consumers.

We have applied a number of assumptions concerning the expected performance of networks companies in the next regulatory period in light of the proposed totex incentive rates. There is uncertainty regarding how the network companies will respond in practice to the lower totex incentive rates proposed in our Draft Determinations proposals. Our quantitative estimates are based on some theoretical assumptions and should be considered indicative of possible outcomes. Accordingly, we have provided three different scenarios.

Overall, we consider that the potential for significant consumer benefit resulting from our Draft Determinations proposals outweighs the risk associated with them.

Will the policy be reviewed? **Yes**	If applicable, set review date: **From 2020**	
Is this proposal in scope of the Public Sector Equality Duty?		**No**

Summary of impacts on consumers and network companies

Table 1 provides a high-level summary of the expected impacts of the Draft Determinations proposals), relative to the counterfactual. Further detail on the underlying analysis and evidence can be found in the relevant chapters throughout this document.

The monetised impacts set out below represent a partial quantification of some of the components of our Draft Determination proposals.

The NPV presented is an updated estimate of the impact on consumers over the next regulatory price control period (2021/22 to 2025/26), compared against the RIIO-1 counterfactual. To capture how network companies may respond to changes to the totex incentive rates we have modelled three different cases: low, central and high.

We also present our assessment of net benefits to consumers, including and excluding the switch from RPI to CPIH and depreciation of gas transmission network assets. These changes result in reduced benefits to consumers within the next regulatory period but are value-neutral to both consumers and network companies in the long-run. We note that most of the expected quantified impacts on consumers arise from an assumed transfer from companies to consumers, due to changes to the allowed return on equity, compared to the counterfactual[9].

Under our assumptions, we also expect changes to the totex incentive rate to result in a transfer of benefit from companies to consumers. We note that our central case estimate may be an underestimate of expected consumer benefits. This reflects the use of conservative assumptions around network companies' responses to a reduction of the totex incentive rate (see Chapter 2 for further details).

The quantified impacts now include changes to methodologies used for estimating allowed totex expenditure ie ongoing and benchmarking efficiency. We would expect these changes to result in a net benefit to consumers.

Further we note the that our estimates of impacts from the proposed change in the totex incentive rate, ongoing efficiency and benchmarking efficiency disregard the slow

[9] The transfer should be intended as a reduction in the allowed return on equity compared to the RIIO-1 counterfactual, which in part reflects a fall in financing costs.

money[10] component of totex, which is added to the Regulatory Asset Base[11] of gas and electricity transmission, and gas distribution network companies, and as such they should be considered an overestimate of the impacts arising from changes to the methodologies for estimating these parameters.

Most of the figures presented in the table refer to the gas and electricity transmission, and gas distribution sectors. However for the baseline allowed return on equity and the switch to CPIH the financial impacts for the ESO are included in the totals. The ESO however only accounts for a small proportion of total NPV presented.

Compared to the draft IA, our estimate of total expected quantified benefit for consumers is lower. This is the result of: a) reporting figures in 2018/19 prices rather than 2021/22 prices as in the draft IA; and b) updated analysis using actual values and approaches, as proposed in the Draft Determinations; c) including new areas of analysis such as the depreciation of gas transmission network assets which reduce the NPV in the regulatory period.

It is the aim of some of the mechanisms proposed in the Draft Determinations to risk and return between consumers and companies. These include Uncertainty Mechanisms (including indexation of the baseline allowed return on equity and debt), Price Control Deliverables and blended sharing factors.[12] The introduction of the Return Adjustment Mechanisms is expected to protect both consumers and investors against ex post overall returns deviating greatly from ex ante expectation.

[10] Slow money is where costs are added to the RAV and therefore revenues are recovered slowly (eg over 20 years) from both existing and future consumers. Please See Glossary, RIIO-2 Draft Determinations - Core Document.
[11] This is defined in simple terms as the value of the assets owned by network companies. For a detailed and comprehensive definition please see Glossary, RIIO-2 Draft Determinations - Core Document.
[12] https://www.ofgem.gov.uk/system/files/docs/2019/01/riio-2_sector_methodology_0.pdf p 173.

Table 1: Impact on consumers of Draft Determinations proposals compared to counterfactual - quantified & non-quantified impacts, NPV of consumer benefit (£m 2018/19, discounted)

Area of package	Mechanism	Low	Medium	High
Changes to financial parameters	Return on equity	2,784	2,784	2,784
		Network companies will receive less remuneration for equity investment. Key credit ratios are expected to be broadly similar or slightly improved on a notional company basis.		
	Switch to CPIH	-1,433	-1,433	-1,433
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
	Depreciation of gas transmission network assets	-468	-468	-468
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
Changes to incentives	Totex Incentive Mechanism and informational tools	48	73	97
		Unclear - consumers might not benefit from a change in informational tools and lower incentive rates as a degree of informational asymmetry persists over time		
	Output Delivery Incentives	Consumers might benefit if combination of recalibrated targets and narrower performance ranges does not affect delivery of common outputs. Potential benefit from delivery of bespoke outputs. However, because of limited comparability and historical information they might be paying more needed.		
	Price control deliverables	Consumers might benefit as they only fund activities that are delivered		
	Ongoing efficiency	173	173	173
	Benchmarking efficiency	170	170	170
Changes to other elements	Return adjustment mechanisms	0	0	0
		RAMs are unlikely to be triggered under all scenarios considered.		
	Innovation funding	No change compared to counterfactual as proposed innovation funding is broadly in line with that made available in RIIO-1		
	Competition	Uncertain- likely to result in consumer benefit if projects are approved		
Administration costs		Some additional administration and resource costs for the regulator and companies due to new tools introduced but no change compared to counterfactual in relation to uncertainty mechanisms. These would be passed onto consumers.		
Total quantified impacts		1,274	1,299	1,323
Total, not including switch to CPIH and depreciation of gas assets		3,175	3,200	3,224

1. Updates to options and analysis of impacts

In this chapter, we explain the updates we have made to our analysis, compared to the draft IA. These updates take into account changes to external factors, new areas of analysis as well as business plan submissions from network companies and the revenue allowances, outputs and incentives as proposed at Draft Determinations.

1.1 Since the publication of the draft IA and of the SSMD, there have been a number of external developments as well as other changes and refinements to policies, as well as to the tools and methodologies . This has meant that the analysis presented in the draft IA required an update to reflect these changes.

1.2 Specifically, we have updated our analysis to take into account:

a) Methodology decisions that have already been made but where the values, and therefore the quantified impacts, have been updated at Draft Determinations at a sector and/or company level. We have updated our analysis of the quantified impacts to reflect the submission of business plans by network companies and the proposed revenue allowances as set out in Draft Determinations documents. This is the case for impacts relating to changes to baseline totex allowances and to key financial parameters, eg equity, indexation of Regulatory Asset Value (RAV) and allowances using CPIH;

b) Draft Determinations proposals relating to changes to incentives, eg number and types of outputs and totex incentive rates. The updated analysis reflects the submission of business plans by network companies and the proposed totex incentive rates and output delivery incentives (ODIs), as set out in Draft Determinations documents. For these incentives, approaches to quantification have been revised to take into account the impact on companies' revenues, as well as adjustments to the counterfactual and to some of the assumptions used;

c) New areas of analysis, reflecting changes to methodologies, which have been applied at Draft Determinations. This includes: depreciation of gas transmission network assets, benchmarking and on-going efficiency assumptions.

d) External developments, such as government targets for Net Zero and new requirements, as set out in Ofgem's updated IA Guidance.

1.3 We provide further detail regarding C) and D) in this chapter. Updates to analysis relating to A) and B) are described in Chapter 2 as part of our discussion of impacts on consumers and companies.

1.4 In updating the IA for the factors described above, we have followed the same approach as in the draft IA. The updated IA measures the relative impact of our Draft Determinations proposals option against the counterfactual, namely the continuation of the RIIO-1 framework, with no material changes to the tools used or overall decisions made.

1.5 The monetised impacts presented represent a partial quantification of some of the components of our Draft Determinations proposals over the next regulatory period. To capture how network companies might respond to changes to the totex incentive rate we have modelled three different cases. These are explained in Chapter 2.

1.6 In a number of areas, it has not been possible to carry out a quantitative assessment, due to the lack of quantitative data or the nature of the mechanism considered (eg reputational output delivery incentives). In those instances, we have considered impacts on a qualitative basis. We set out in Chapters 3 and 4 our qualitative assessment. We have highlighted where our updated assessment is different from that conducted in the draft IA.

1.7 Some of the quantified and non-quantified impacts are subject to uncertainty arising from the response by network companies to the combination of tools and parameters employed, and from the demand for network services. In Chapter 6 we discuss the specific uncertainties associated with our quantified impacts.

1.8 As in the draft IA, we captured short and longer-term impacts in terms of the immediate impact on company revenues/profits, benefits to consumers, and the range and quality of network services that companies deliver. We distinguished, where possible, between those impacts that may be immediately apparent, and those that may not be discernible until future price controls. Impacts in the next regulatory period are discussed in Chapter 3. Those with long-term implications are discussed in Chapter 4.

New areas of analysis

1.9 As mentioned above, there have been a number of changes to the methodologies applied at Draft Determinations, as compared to the RIIO-1 counterfactual. These changes have occurred in the period between SSMD (May 2019) and Draft Determinations (July 2020), and therefore they could not be considered in the draft IA.

1.10 In this IA, we provide new analysis relating to these changes and assess their impact on network companies and consumers in Chapter 2. Table 2 below provides a brief summary of these changes and highlights what areas of the regulatory framework they have an impact on and whether the impact is monetised or not. We then describe each of these changes in turn in the paragraphs below.

Table 2: New areas of analysis considered in this IA

Area of regulatory framework	Option 1: RIIO-1 counterfactual	Draft Determinations proposals : RIIO-2	Monetised or non-monetised impacts
Changes to financial parameters	Depreciation and economic asset lives of gas networks: straight line depreciation with 45 year asset life for GT	Depreciation and economic asset lives of gas networks: align gas transmission depreciation policy with gas distribution. Accelerated depreciation with 45 year asset life.	Monetised
Operational incentives – efficiency adjustments	Benchmarking at upper quartile	Benchmarking at 85th percentile	Monetised
	Ongoing efficiency adjustment to account for productivity	• Ongoing efficiency adjustment to account for productivity • Additional on-going efficiency adjustment from innovation funding	Monetised
Other- Decarbonisation and Net Zero	Environmental Plans Net Zero reopener	Environmental Plans Net Zero Reopener	Non- monetised

Depreciation and economic asset lives of gas networks

1.11 Under Draft Determinations proposals, Ofgem proposes to align the depreciation profile of assets owned by NGGT to that of gas distribution assets.[13] Depreciation would be calculated on the basis of a 45 year life, front loaded, with the backlog of depreciation recovered over 20 years beginning at the start of RIIO-2.

1.12 Under the counterfactual Ofgem would retain 45 year straight line depreciation for gas transmission.

1.13 We present our analysis in Chapter 3.

Efficiency adjustments

1.14 In any regulatory period, the regulator needs to come to a view on the amount of efficient funding needed to allow network companies to install new long-life assets or maintain/upgrade existing assets; and on the operational expenditure required for running and maintaining the network.

1.15 In addition to our view of efficient cost levels, we also expect network companies to strive for improvements in the way they operate through the price control period. We do this through the imposition of efficiency adjustments on their totex expenditure.

1.16 Efficiency adjustments fall into two categories: those we estimate through benchmarking ("benchmarking efficiency"), and those relating to changes in productivity over time ("ongoing efficiency").

Ongoing efficiency

1.17 The level of the ongoing efficiency adjustment is informed by forecasts of growth in the general economy and specific inputs to the companies' activities, for example, labour and input material prices.

1.18 In RIIO-1, we applied an ongoing efficiency adjustment using growth accounting data, based on EU KLEMS[14], in both transmission and the gas distribution sectors.

[13] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf Para 10.4 p 145.
[14] EU KLEMS is an industry level, growth and productivity research project. EU KLEMS stands for EU level analysis of capital (K), labour (L), energy (E), materials (M) and service (S) inputs.

1.19 As discussed in the SSMD, we considered retaining EU KLEMS as our preferred data source but we also explored alternative options for assessing productivity.[15]

1.20 In our Draft Determinations[16], we have proposed to use a similar methodology to that used for RIIO-1, updated to account for the most recent productivity data available from EU KLEMS and to introduce an additional efficiency adjustment to account for the ongoing efficiency gains we expect as a result of the innovation investments made in RIIO-1.

1.21 We consider the impact of this additional ongoing efficiency adjustment on companies and consumers in Chapter 2.

Benchmarking efficiency

1.22 In previous price controls, we used benchmarking tools to drive cost efficiency in the transmission and gas distribution sectors.

1.23 In our Draft Determinations proposals for the transmission sector we applied methodology broadly similar to that used in RIIO-1, setting baseline totex allowance where there is certainty in the needs case for work and using an efficient average cost of planned work, while incorporating uncertainty mechanisms to adjust the funding level in response to change of needs.

1.24 For the gas distribution sector in RIIO-1, we used the upper quartile (75th percentile) to set a catch up efficiency adjustment.

1.25 For the next regulatory period, as proposed in the GD Draft Determinations Annex[17], we propose to set the efficiency frontier at the 85th percentile.

1.26 In Chapter 2 we assess the impact of changes to the efficiency adjustment on companies and consumers.

[15] SSMD core document, page 69.
[16] Please see pages 47-48, Draft Determinations Consultation - Core document.
[17] See paragraphs 3.23-3.29. RIIO-2 Draft Determinations - Gas Distribution Annex.

External developments

Decarbonisation and Net Zero

1.27 Since the publication of the draft IA the UK and Scottish Governments have passed legislation enshrining in law the target of Net Zero greenhouse gas emissions by 2050 and 2045 respectively. The Welsh Government also intends to introduce legislation to amend its existing target to achieve net zero no later than 2050. In February this year, Ofgem published its Decarbonisation Action Plan[18] ('the plan'), which sets out the actions it will take within the next 18 months, beginning our next steps on a swift acting, but decades-long journey towards Net Zero.

1.28 The Plan recognises that network companies will play a crucial role in helping to deliver Net Zero, but that changes to the RIIO framework are required to facilitate this, particularly in terms of the importance of embedding coordination and flexibility into the design of the RIIO-2 price controls.

1.29 In Draft Determinations, we proposed to retain the approach of previous price controls to use uncertainty mechanisms to flex the price control in response to major system or policy changes. Additionally, we proposed a suite of net zero related mechanisms, including the new Strategic Innovation Fund and a new Net Zero reopener, that can help to enable key developments in regulatory policy or technology to be reflected flexibly in the price controls. These mechanisms would allow for net zero-related actions to be put into place during the price control, rather than being set at the start of the control period.

1.30 We believe that similar or equivalent mechanisms to those proposed in Draft Determinations[19] would have been implemented under the counterfactual. As discussed in Chapter 4, we note that network companies have an enabling effect in facilitating, for example, greenhouse gas reductions in other parts of the value chain, but their direct impact on greenhouse gas is limited.

[18] https://www.ofgem.gov.uk/publications-and-updates/ofgem-s-decarbonisation-action-plan
[19] Please see Chapter 7, Managing uncertainty,RIIO-2 Draft Determinations - Core Document, for a detailed discussion of the mechanisms proposed in Draft Determinations.

Ofgem updated Impact Assessment Guidance

1.31 Our updated IA guidance explains how we might consider the distributional impacts of our decisions on consumers.[20] It sets out the analytical framework we will apply, as appropriate, to assess the impact of our decisions on particular groups of consumers, such as those in vulnerable situations.

1.32 We present our updated analysis of distributional impacts, according to the framework described in Chapter 5 of the Guidance, in Chapter 4 of this document.

1.33 The updated guidance also provides more details on how we might assess environmental impacts of decisions, in particular the impact on air quality and greenhouse gas emissions.

1.34 We apply this updated guidance in Chapter 3 and 4, where we discuss environmental impacts in the next regulatory period and beyond. In the same chapters, we also look at the new mechanisms which Ofgem proposes to introduce to achieve Net Zero.

Covid-19

1.35 In this IA we have not considered the impact of the Covid-19 pandemic as, at this stage, it is not possible to forecast accurately its implications on network companies and consumers. We will review its impacts as part of any review of the IA at Full Determinations.

[20] Ofgem (2020) Impact Assessment Guidance: https://www.ofgem.gov.uk/publications-and-updates/impact-assessment-guidance

2. Impacts on companies and consumers in the next regulatory period

In this chapter, we present our updated analysis of the impacts arising from our Draft Determinations proposals on network companies and consumers compared to the counterfactual. Where possible, we present quantified or partially quantified impacts. In other areas, we consider the impacts using qualitative analysis.

Summary

2.1 In this chapter we present our updated assessment of the impact of our Draft Determinations proposals option on companies' revenues and financeability; and on energy consumers arising from:

- changes to financial parameters;
- changes to incentives;
- changes to other elements of the regulatory framework; and
- administration and resource costs.

2.2 We find that, over a five-year period, company revenues would decrease by approximately £3.3 billion compared to the counterfactual.

2.3 We find that consumers would benefit by approximately £3.2 billion compared to the counterfactual.

2.4 We set out the estimated impacts on network companies in table 3. Similarly, in table 4, we present the impact on consumers.

2.5 In line with the draft IA, we have undertaken a partial quantification of our Draft Determinations proposals. Our updated analysis is based on a number of assumptions which are explained throughout this chapter.

2.6 We note that most of the expected quantified impacts on consumers arise from a transfer from companies to consumers due to changes to the allowed return on equity.

2.7 Most of the figures presented in the tables refer to the gas and electricity transmission, and gas distribution sectors. However for the cost of equity, and switch to CPIH, financial impacts for the ESO are included in tables 3 and 4. The ESO, however, only accounts for a small proportion of the total NPV presented in tables 3 and 4.

2.8 We note the that our estimates of impacts resulting from the totex incentive rate, ongoing efficiency and benchmarking efficiency disregard the slow money component of totex which is added to the Regulatory Asset Base of network companies and so they should be considered an overestimate of the impacts arising from changes to the methodologies for estimating these parameters in the next regulatory period.[21]

[21] Please see footnote 22 for further details.

Table 3: Impacts on network companies' revenues resulting from Draft Determinations proposals from all sectors over a five-year price control – quantified and non-quantified impacts (£m 2018/19, discounted)[22]

Area of package	Mechanism	Draft Determinations		
		Low	Medium	High
Changes to financial parameters	Return on equity	-2,784	-2,784	-2,784
		Network companies will receive less remuneration for equity investment. Key credit ratios are expected to be broadly similar or slightly improved on a notional company basis.		
	Switch to CPIH	1,433	1,433	1,433
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
	Depreciation of gas transmission network assets	468	468	468
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
Changes to incentives	Totex Incentive Mechanism and informational tools	-137	-206	-274
		Unclear - Change in tools used might not reduce informational rents		
	Output Delivery Incentives	Recalibration of targets and narrower caps an collars ranges for common output delivery incentives might lead to average performance of zero across all sectors. Additional revenues from bespoke ODIs for some companies.		
	Price control deliverables	Potential for reduction in company revenues if they do not deliver.		
	Ongoing efficiency	-173	-173	-173
	Benchmarking efficiency	-170	-170	-170
Changes to other elements	Return adjustment mechanisms	**0**	**0**	**0**
		RAMs are unlikely to be triggered under all scenarios considered.		
	Innovation funding	We do not anticipate significant changes to companies revenues compared to counterfactual because proposed innovation funding is broadly in line with that made available in RIIO-1		
	Competition	Uncertain- likely to result in a reduction of revenues, compared to counterfactual if projects are approved		

[22] Figures for Totex Incentive Mechanism, ongoing efficiency and benchmarking efficiency are expenditure numbers not revenues. In the long run the net present value of these measures, should be the same. However in the 5 year RIIO-2 period they may have different impacts depending upon whether they are fast money or slow money (capitalised into the RAV). We have not modelled this factor in this Impact Assessment. Therefore our estimates in the table, for these parameters, should be considered an overestimate of the impact on companies' revenues.

Area of package	Mechanism	Draft Determinations		
		Low	Medium	High
Administration costs		Some additional administration and resource for companies due to new tools introduced but no change compared to counterfactual in relation to uncertainty mechanisms		
Total quantified impacts		-1,363	-1,432	-1,500
Total, not including switch to CPIH and depreciation of gas assets		-3,264	-3,333	-3,401

Table 4: Impacts on consumers resulting from Draft Determinations proposals across all sectors over a five-year price control – quantified and non-quantified impacts (£m 2018/19, discounted)[23]

Area of package	Mechanism	Low	Medium	High
Changes to financial parameters	Return on equity	2,784	2,784	2,784
		Network companies will receive less remuneration for equity investment. Key credit ratios are expected to be broadly similar or slightly improved on a notional company basis.		
	Switch to CPIH	-1,433	-1,433	-1,433
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
	Depreciation of gas transmission network assets	-468	-468	-468
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
Changes to incentives	Totex Incentive Mechanism and informational tools	48	73	97
		Unclear - consumers might not benefit from a change in informational tools and lower incentive rates as a degree of informational asymmetry persists over time		
	Output Delivery Incentives	Consumers might benefit if combination of recalibrated targets and narrower performance ranges does not affect delivery of common outputs. Potential benefit from delivery of bespoke outputs. However, because of limited comparability and historical information they might be paying more needed.		
	Price control deliverables	Consumers might benefit as they only fund activities that are delivered		
	Ongoing efficiency	173	173	173
	Benchmarking efficiency	170	170	170
Changes to other elements	Return adjustment mechanisms	**0**	**0**	**0**
		RAMs are unlikely to be triggered under all scenarios considered.		
	Innovation funding	No change compared to counterfactual as proposed innovation funding is broadly in line with that made available in RIIO-1		

[23] Figures for Totex Incentive Mechanism, information tools, ongoing efficiency and benchmarking efficiency are expenditure numbers not revenues. In the long run the net present value of these measures, should be the same. However in the 5 year RIIO-2 period they may have different impacts depending upon whether they are fast money or slow money (capitalised into the RAV). We have not modelled this factor in this Impact Assessment. Therefore our estimates in the table, for these parameters, should be considered an overestimate of the impact on consumers.

Area of package	Mechanism	Low	Medium	High
	Competition	Uncertain- likely to result in consumer benefit if projects are approved		
Administration costs		Some additional administration and resource costs for the regulator and companies due to new tools introduced but no change compared to counterfactual in relation to uncertainty mechanisms. These would be passed onto consumers.		
Total quantified impacts		1,274	1,299	1,323
Total, not including switch to CPIH and depreciation of gas assets		3,175	3,200	3,224

Impacts from changes to financial parameters

Impacts from changing the allowed return on equity

Counterfactual and Draft Determinations proposals

2.9 Ofgem sets the baseline allowed return on equity using a 3 step process detailed in the Draft Determinations Finance Annex. [24] At 60% notional gearing, Ofgem estimated a cost of equity of 4.20% and proposed an allowed return on equity of 3.95%. At 55% notional gearing Ofgem estimated a cost of equity of 3.92% and proposed an allowed return on equity of 3.75%.[25] For the ESO, Ofgem estimated a cost of equity and proposed an allowed return on equity of 5.28%.[26]

Methodology and estimated effects

2.10 The counterfactual is to assume that the RIIO-1 cost of capital is applied for the RIIO-2 period. The impact in Table 5 is calculated as the difference between the counterfactual and the RIIO-2 Draft Determinations proposals.

[24] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf paras 3.1 to 3.174 pages 30 to 91.
[25] Ibid. Para 4.1. Table 31 p 92.
[26] ESO figures are included in these estimates with no changes assumed over the five year period. Further information on the proposed cost of capital for the ESO can be found at https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_eso.pdf p 73.

Table 5: Impact of changes to baseline allowed return on equity on companies' revenues over a five-year price control (£m 2018/19, discounted)

Sector	£m
Gas Transmission	-353
Gas Distribution	-977
Electricity Transmission	-1,443
ESO[27]	-11
Total impact	-2,784

Impact resulting from indexation of the RAV and allowed returns to CPIH

CPIH under different options

2.11 Ofgem proposed in the Draft Determinations to implement an immediate switch from RPI to CPIH.[28] The counterfactual is that RIIO-2 continues using RPI as an estimate of inflation.

Methodology and estimated effects

2.12 The switch to CPIH has 3 main effects: the RAV is smaller in future so less return is earned; the allowed return is increased by the size of the estimated wedge between RPI and CPIH; and a smaller RAV means a lower depreciation allowance. For the purposes of estimation of impacts, the size of the wedge is estimated to be 0.813%.

[27] Over the 5 year RIIO-2 period for the ESO.
[28] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf para 9.13 and after p. 143.

Table 6: Impact on companies' revenues of a change from RPI to CPIH indexation of the RAV & cost of capital over a 5 year price control (£m 2018/19, discounted)

Sector	£m
Gas Transmission	184
Gas Distribution	625
Electricity Transmission	617
ESO[29]	7
Total impact	1,433

Impacts on financeability

2.13 As noted in the SSMD, Ofgem does not target any particular rating or credit ratio. However, in common with the networks themselves, Ofgem does consider forecasts of key financial metrics and draws on rating agency methodologies to assess likely credit quality in the round, which in turn influences its view of access to and cost of capital.

2.14 Ofgem has proposed to set gearing for the Gas Distribution and Transmission sectors at 60%, and for the Electricity Transmission sector at 55%. The impact of this change is reported as part of the reported impacts of change of cost of debt in table 30. [30]

Impact resulting from changes to gas depreciation policy

2.15 In Draft Determinations, Ofgem proposed to align depreciation policy for GT and GD for RIIO-2 so that the depreciation policy for both sectors is on a 45-year front loaded basis, for RAV additions from 2002 onwards.[31]

2.16 Relative to RIIO-1, this change would increase NGGT's allowed revenues in the RIIO-2 period by approximately £120m per year: we therefore use this value to estimate our base case.

2.17 Under the counterfactual, Ofgem would retain the current RIIO-1 approach to GT assets of 45-year straight line.

[29] For the ESO over the 5 year RIIO-2 period.
[30] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf p 96.
[31] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf para 10.12 p 143.

2.18 We find the net effect under RIIO-2 to have NPV of £468m.

Impacts from changes to incentives

Impact from changes to informational tools

2.19 In RIIO-1 (the counterfactual) Ofgem used two tools to incentivise companies to submit accurate expenditure projections and better-quality Business Plans: the IQI and fast-tracking. Through the IQI mechanism, Ofgem set the totex incentive rate and also provided the opportunity for an upfront reward based on a comparison of companies' totex forecasts against our view of efficient costs. Fast-tracking was intended to encourage companies to submit well-justified and good quality Business Plans. In RIIO-1, fast-tracked companies received additional upfront income, as well as higher totex incentive rates, compared to slow-tracked companies.

2.20 In SSMD we decided to remove both the IQI and fast-tracking and replaced it with the Business Plan Incentive (BPI) and the confidence dependent sharing factor. The BPI was developed to encourage network companies to submit ambitious Business Plans that contain the information Ofgem requires to undertake a robust assessment of the Business Plans. The BPI rewards companies where, in our view, their Business Plan represents genuine additional value for money for consumers compared to business-as-usual and provides information that helps us to set a better price control. In contrast, inefficient, lower quality Business Plans are subject to financial penalties (Stages 3 and 4).

2.21 In the draft IA, we considered that the direct impact from the use of these new tools resulted from the rewards/penalties that companies would face, which would lead to higher or lower revenues under the price control. At that time, we did not attempt to quantify the size of the reward/penalty that companies might face relative to the counterfactual as this would have required making assumptions about the content and quality of company Business Plans. Neither did we attempt to quantify the behavioural impact on companies arising from the BPI these revised / new tools nor their effectiveness in countering companies' incentives to overstate totex allowances compared to the counterfactual.[32]

[32] See Chapter 4, paragraphs 4.99 and 4.107-4.111 of the Draft impact assessment: https://www.ofgem.gov.uk/system/files/docs/2019/06/riio-2_network_price_controls_draft_impact_assessment_0.pdf

2.22 In this IA we have attempted to quantify the direct impact of moving away from the IQI in the counterfactual and using the BPI instead. We note however that there are some differences between the IQI and the BPI mechanisms which limit the comparability between these two tools. For example, whereas the IQI had a reward cap of 2.5% of totex and no collar, the BPI has a cap and collar of ±2.0% of totex. Whilst the IQI mechanism was also used to derive the sharing factors for the totex incentive mechanism, the BPI mechanism only provides the company with an upfront reward/penalty. Totex incentive rates are calculated separately as part of the totex cost assessment. Further, the IQI is a more mechanistic tool compared to the BPI, with the BPI introducing some qualitative components (such as Stage 2, which involves the assessment of companies' Consumer Value Propositions), and a more a subjective evaluation in Stage 3 (on poorly justified costs) and under Stage 4 (high confidence costs eligible for rewards).[33] Despite these differences, both mechanisms have the same objectives, ie to incentivise companies to submit accurate expenditure projection and better quality Business Plans, and we have therefore undertaken a comparative analysis of the two mechanisms. We describe our methodology and results below.

Methodology

2.23 We have quantified rewards/penalties from the BPI proposals[34] and compared them with those that companies would have faced under the IQI. The table and text below describes how we undertook the analysis, and sets out the assumptions made underpinning DDs.

Table 7: Informational tools – methodology for comparing the IQI to the BPI

	Counterfactual	Draft Determinations proposals
Inputs	Ofgem's view of baseline costs at Draft Determinations for RIIO-2. RIIO-1 IQI scores.	Ofgem's view of baseline costs at Draft Determinations for RIIO-2. Company view of baseline costs for RIIO-2 as submitted in their Business Plans.
IQI/BPI	Using the RIIO-1 IQI scores and Ofgem's view of baseline costs at Draft Determinations for RIIO-2, we derived what the company view of baseline costs would have been under the IQI mechanism.	Upfront reward/penalty resulting from the BPI analysis for Stages 1, 2, 3 and 4. Maximum penalty/reward of +/-2.0% of totex.

[33] Please see, RIIO-2 Business Plan Guidance, Section 5, for a description of the different components of the Business Plan Incentive.
[34] See Chapter 10 of Draft Determinations Core Document: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_core_document.pdf

	Using the IQI matrix (as calibrated in RIIO-1) we calculated the upfront reward/penalty for each company based on the RIIO-1 IQI scores. The maximum reward was set at 2.5% of totex, as per RIIO-1.	

2.24 In undertaking this analysis, we have made a number of key assumptions. Specifically we have assumed that:

a) Companies would have submitted different Business Plans under the IQI versus the BPI mechanism. Under the counterfactual, we assume that these submissions would have resulted in the same IQI scores as in RIIO-1.
b) Ofgem has made use of the information revealed by companies in the current RIIO-1 price control to inform its view of baseline costs for the next price control. This new information, coupled with historical information about costs, would have resulted in the same baseline totex allowances in the counterfactual and under Draft Determinations proposals.
c) In Draft Determinations, a significant proportion of costs has been captured in uncertainty mechanisms. We consider that under the counterfactual a similar proportion of costs would have been subject to uncertainty mechanisms.
d) The investment cycle of companies would be similar under both the counterfactual and Draft Determinations proposals, and it would result in the same proportion of capex and opex, in line with the rationale above.

2.25 These assumptions help to provide a basis for a meaningful comparison of the informational tools across the options.

2.26 We present the results of our analysis in the table below.

Table 8: Impact of changes to informational tools over a five-year price control (£m 2018/19, discounted)

Sector	Counterfactual - Reward/penalty under the IQI	Draft Determinations proposals - Reward/ penalty under the BPI	Delta: impact on the network companies
Gas Trans-mission	-13.4	-26.4	-13.0
Gas Distribution	80.0	0.3	-79.7
Electricity Transmission	100.9	-113.8	-214.7
Total impact	167.5	-139.9	-307.3

Notes:
Draft Determinations proposals - BPI: At Draft Determination, the reward under Stage 2- Consumer Value Proposition is zero for all companies except NGN and SPT. NGN obtained a reward of £1.6m and SPT obtained a reward of £1.6m. See Table 15 of the Draft Determinations – Core Document.

2.27 For Gas Transmission, the upfront penalty under the IQI in the counterfactual would have been smaller than the penalty NGGT would incur under the BPI Draft Determinations proposals.

2.28 For Gas Distribution, whereas the additional upfront income companies would have secured under the IQI in the counterfactual would have been positive (range between £7.0m to £33.0m) at £80.0m across all companies, the additional upfront income under the BPI is much smaller at £0.3m across all companies (range between £1.6m to £-1.1m).

2.29 For Electricity Transmission, the additional upfront income companies would have secured under the IQI in the counterfactual would have been positive (range between £25.2m to £42.4m) at £100.9m across all companies. However under the BPI, the additional upfront income under the BPI would be a penalty amounting to £113.8m across all companies (range between -£15.0m to £-66.6m) if Draft Determinations proposals are implemented.

2.30 Our analysis suggests that under the BPI mechanism, the scope for upfront rewards is reduced compared to the IQI mechanism across all sectors, as shown in the table above. In other words, on average companies would be receiving a lower upfront income and sharper penalties compared to the IQI.

2.31 We note, however, that it is not possible to observe what would have happened under the counterfactual and our results are highly dependent on our assumptions on how companies would have behaved under the counterfactual - in particular 1) and 2). Furthermore, the BPI is a new tool and given companies' informational advantages over the regulator, its ability to deliver benefits to consumers might be more limited.[35] For these reasons, we believe it would not be appropriate to attribute the savings in upfront rewards to consumers.

2.32 We further consider the results from this assessment and the implications on companies and consumers when discussing the third order effect (explained below) arising from the totex incentive mechanism in paragraphs 2.65-2.72.

Impacts from changes to the totex incentive mechanism

2.33 As discussed earlier, in SSMD we decided to set the totex incentive rate using a confidence-dependent approach in which the rate applied to each company is dependent on our assessment of the extent to which costs set out within their Business Plan are 'high-confidence' or 'lower-confidence'.[36]

2.34 Under the counterfactual, Ofgem would have used the IQI to set the totex incentive rate applicable to totex.

2.35 In the draft IA, we considered, based on the information we had at the time[37], that the incentive rate would be lower under the confidence dependant approach compared to the counterfactual.[38] We also identified three 'orders' of effects, resulting from a change to totex incentive rates, which we used to structure our analysis and quantify the impacts. These were categorised as follows[39]:

- The first order effect is the direct effect of a reduction in the totex incentive rate, which allows a greater proportion of underspends (or overspends) against totex allowances to be passed through to consumers.
- The second order effect considers the behavioural response of companies arising from a reduction in the totex incentive rate. We acknowledged that a

[35] Please refer to our discussion of implementation risk in Chapter, page 101, of the draft Impact Assessment.
[36] Please see RIIO-2 Sector Specific Methodology – Core document (May 2019), Chapter 8 for a description of Confidence Dependent Incentive Rate approach.
[37] See RIIO-2 Sector Specific Methodology – Core document (May 2019), Chapter 8 for a description of Confidence Dependent Incentive Rate approach.
[38] See para 4.65-4.67 in draft IA.
[39] For more information on the methodology used, please refer to the RIIO-2 Network Price Controls Draft Impact Assessment. https://www.ofgem.gov.uk/system/files/docs/2019/06/riio-2_network_price_controls_draft_impact_assessment_0.pdf

reduction in the totex incentive rate may result in companies investing lower levels of effort in achieving underspends.

- The third order effect relates to the proportion of underspends which reflects genuine cost efficiencies as opposed to the proportion which reflects information rents.[40]

2.36 We quantified the impact of the first and second orders of effects, however the third order effect was analysed qualitatively.

Updated methodology

2.37 We have retained the same methodology as applied in the draft IA but we have revised some of our assumptions. We describe these revised assumptions in turn below.

Level of underspend

2.38 In the draft IA, we took the actual level of company underspend in RIIO-1[41] to quantify the impact of changing the totex incentive rate. In this IA, we have revised our assumptions for both the counterfactual and Draft Determinations proposals.

2.39 The Draft Determinations – Finance Annex presents detailed analysis of companies' totex outperformance from four regulated sectors (gas, electricity, water and aviation) over a 20-year period (2000 to 2020) covering 24 price controls.[42]

2.40 Specifically in our Draft Determinations Finance Annex we say:

> *"Our analysis of historical data clearly shows that network companies have, more often than not, spent less than allowances, and beaten performance targets, set by respective regulators. More importantly, this observation holds true across sectors and over time, spanning a diversity of regulatory approaches, 24 price control reviews, almost 50 licensees, over a 20-year period. We believe that this provides a*

[40] Here we have ignored whether any underspend could also be achieved through deferral of works from one regulatory period to another.
[41] At the time of the draft IA this was ranging between 4.4% and 8.4% underspend for GD and ET and circa 6.8% overspend for GT over five years
[42] See paragraphs 3.120-3.128 Draft Determinations: Finance Annex.

strong basis for our conclusion that, despite the measures included in our proposed RIIO-2 price controls, companies (on average) have the scope to outperform, and investors can have a reasonable expectation of outperformance."[43]

2.41 The analysis reveals a tendency towards totex underspending with an average underspend of approximately 7%. This suggests that despite any learning from one price control cycle to another, a degree of informational asymmetry between network companies and regulators remains (along with genuine cost efficiencies) and might lead to companies underspending their totex allowances whilst still beating their performance targets.

2.42 Based on the above findings, we have modelled three different levels of underspend over five years: a low case assuming a 5.0% underspend, a central case assuming a 7.5% underspend and a high case reflecting a 10.0% underspend.

2.43 We note that these assumptions interact to some extent with the plausible estimates of the distinction between allowed and expected returns (AR-ER wedge) and that there is a risk of double counting. However as our current estimate of the wedge is at 25 basis point of RORE[44], which is equivalent to 2%-4%[45] of totex outperformance we believe there is no double counting as our assumptions are in line with the finding reported above of 7% totex outperformance.[46] Further we note the wedge is not designed to entirely or perfectly capture future outperformance. [47]

Totex Incentive rate

2.44 In the draft IA, we compared the expected impacts of option 3 against the counterfactual which was based on the totex incentive rates and level of underspends observed under RIIO-1. For option 3, we applied three hypothetical totex incentive rates: 15%, 32.5% and 50% to the levels of totex underspend which companies were forecast to achieve under RIIO-1.

[43] Ibid, para 3.127.
[44] Ibid, para 3.126, p. 73.
[45] Ibid, para 3.126, p. 73.
[46] Ibid, para 3.123, page 72.
[47] Ibid, para 3.148, page 82.

2.45 In this IA, in line with our analysis of informational tools, we have used totex incentive rates as determined by the IQI mechanism under the counterfactual. In our Draft Determinations proposals, incentive rates have been set according to the approach in SSMD, ie confidence dependant approach. The application of this new method has resulted in the rates presented in the table below for each sector. Section 10 of the Draft Determinations Core document[48] explains the process followed.

Table 9: Incentive rates under the counterfactual and Draft Determinations proposals

Sharing factors	Counterfactual	Draft Determinations proposals	Reduction in sharing factor relative to counterfactual[49]
Cadent	63.0%	49.7%	21.2%
NGN	64.0%	49.8%	22.2%
SGN	63.7%	49.5%	22.3%
WWU	63.2%	49.6%	21.5%
NGET	46.9%	39.2%	16.4%
SHET	50.0%	30.9%	38.2%
SPT	50.0%	39.1%	21.8%
NGGT	44.4%	36.6%	17.5%

Totex allowances

2.46 In line with our analysis of informational tools, we have assumed that Ofgem's proposed baseline totex would be the same under Draft Determinations proposals and under the counterfactual.

2.47 Below, we present the results of our quantitative analysis of the first and second orders of effect.

[48] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_core_document.pdf
[49] Calculated as: 1 – (Draft Determinations proposals sharing factor ÷ Counterfactual sharing factor)

Estimate of first order effect

2.48 As mentioned above, the first order effect is the direct effect of a reduction in the totex incentive rate, which allows a greater proportion of underspends (or overspends) against totex allowances to be passed through to consumers.

2.49 In the table below, we present the impact of Draft Determinations proposals as a result of the first order effect only.

Table 10: Impact on totex revenues of the change in the totex incentive strength for Draft Determinations proposals relative to the counterfactual under different underspend scenarios (£m 2018/19, discounted) - first order effect[50]

Underspend scenario	5.0% underspend	7.5% underspend	10.0% underspend
Gas Transmission	-7.2	-10.8	-14.4
Gas Distribution	-57.8	-86.7	-115.6
Electricity Transmission	-34.0	-51.1	-68.1
Total impact on totex	-99.1	-148.6	-198.2

2.50 Based on the hypothetical levels of underspend of 5.0%, 7.5% and 10.0% over five years, we identify a potential reduction in gas transmission company totex revenues between £7.2m and £14.4m as a result of the first order effect of changes to the level of the totex incentive rate. For Gas Distribution, company totex revenues would reduce by £57.8m to £115.6m and for Electricity Transmission, company totex revenues would reduce by £34.0m to £68.1m.

2.51 The impacts modelled in this IA are lower than the impacts modelled in the draft IA. There are two reasons for this difference:

- **the proposed sharing factor levels**: in the draft IA, we modelled the totex incentive mechanism under a range of sharing factors for option 3: 15%, 32.5% and 50%. In this IA we have used the totex incentive rates as per the Draft Determinations (which range between 30.9% and 49.7%, as presented

[50] In quantifying the impact of companies revenues we have disregarded the distinction between fast money and slow money (capitalised into the RAV). We have not modelled this factor in this Impact Assessment. Therefore our estimates in the table above should be considered an overestimate of the impact on companies' revenues.

in Table 9: Incentive rates under the counterfactual and Draft Determinations proposals);

- **the hypothetical levels of underspend assumed**: in the draft IA, we used the actual level of underspend companies had achieved under RIIO-1 to date, ie approximately 8.4% underspend for GD, 4.4% underspend for ET and 6.8% overspend for GT. In this IA we have modelled hypothetical levels of underspend between 5.0% and 10.0%.

2.52 Consequently, the combination of these two elements has resulted in lower impacts associated with the changes to the totex incentive mechanism. These differences are considerably larger in the cases where we assumed lower sharing factors in the draft IA. The results in this IA are closer to the results modelled in the draft IA for the case where a 50% sharing factor was assumed. For example, in this IA, the total impact across the three sectors assuming an underspend of 7.5% and sharing factors close to 40%-50% is estimated to be £-153.9m while in the draft IA the total impact across the three sectors assuming a sharing factor of 50% (and actual RIIO-1 underspend) was estimated at -£159.8m.[51]

Estimate of second order effect

2.53 We estimate the impact on company revenues and on consumer benefit resulting from the combination of the first and second order effects.

2.54 The second order effect considers the behavioural response of companies arising from a reduction in the totex incentive rate. In other words, we account for this by acknowledging that a reduction in the totex incentive rate may result in companies investing lower levels of effort in achieving underspends. In the draft IA we modelled this using the concept of mapping factors. We have retained the same approach in this IA.

2.55 We take the first order effect (no behavioural response) as a lower bound, ie low case where the relationship between the reduction in the totex incentive rate and underspend is based on a mapping factor of 1:0 ratio. We defined the upper bound based on a mapping factor of 1:1 ratio. As a central case, we considered a 2:1 ratio. Our assumptions are summarised in the table below:

[51] £-169.6m in 2021/22 CPIH

Table 11: Mapping factors used for estimating second order effect

Case	Mapping factor	Reduction in totex incentive rate (%)	Reduction in underspend (%)
Low case	1:0	20%	0%
Central case	2:1	20%	10%
High case	1:1	20%	20%

2.56 It is important to note that only a proportion of lost company revenues identified previously result in a direct transfer to consumers. Wherever reduced underspends by companies reflect a loss of cost efficiencies, the benefits to consumers will be lower than the lost company revenues. This is because of a combination of the following two effects[52]:

- **Increased transfer to consumers from reduction to totex incentive rate:** The first order effect results in companies delivering the same level of underspends but with more of these underspends being shared with consumers. All of the lost company revenues from this effect are therefore reflected as additional consumer benefit.
- **Reduction in cost efficiencies resulting from reduction to totex incentive rate:** Under the second order effect, companies reduce the level of cost efficiencies that they deliver (for all mapping factors other than 1:0). This reduces company revenues as underspends against totex allowances are reduced. This also reduces consumer benefits as consumers no longer benefit from their share of company underspends (set via the totex incentive rate).

2.57 There are therefore two opposing impacts on consumers. Firstly, the reduction in the totex incentive rate allows consumers to share a greater proportion of any company underspends. Secondly, consumers will lose out where the reduced totex incentive rate reduces delivered cost efficiencies. We therefore find levels of

[52] Alternatively, we can consider this arithmetically:
The reduction in company revenues is equal to the change in the incentive rate multiplied by the reduction in underspends: $\Delta CR = \Delta IR \times \Delta US$
The increase in consumer benefit is equal to the inverse of the change to the incentive rate multiplied by the reduction in underspends: $\Delta CB = \Delta(1-IR) \times \Delta US$
Therefore, a reduction in the incentive rate results in an equal and opposite effect. Company revenues are reduced while consumer benefit increases. On the other hand, both company revenues and consumer benefits are reduced by a reduction in the level of underspends.

consumer benefit which are different from the loss of revenues experienced by companies for all mapping factors other than 1:0.

2.58 Using the assumption that 100% of reduced underspend reflects a loss of cost efficiencies, the benefit to consumers is likely to be an underestimate. In practice, a proportion of the reduction is likely to result from a loss of company information rents. Where information rents are reduced, consumers will benefit as they no longer have to pay for underspends to companies that do not provide actual cost efficiencies. We explore the potential implications of this when considering the third order effect.

Table 12: Impact on totex revenues resulting from first and second order effects for all sectors (electricity transmission, gas transmission and gas distribution) (£m 2018/19, discounted)[53]

Underspend scenario	5.0% underspend		7.5% underspend		10.0% underspend	
Impact	Network companies	Consumers	Network companies	Consumers	Network companies	Consumers
Mapping 1:0	-99.1	99.1	-148.6	148.6	-198.2	198.2
Mapping 2:1	-137.1	48.4	-205.7	72.6	-274.2	96.9
Mapping 1:1	-175.2	-2.2	-262.7	-3.4	-350.3	-4.5

Note: The green cell represents our central estimate.

2.59 As a result of the combined first and second order effects, company revenues are lower with a lower totex incentive rate and as the mapping factor between the totex incentive rate and underspend becomes stronger. When combined, companies receive a lower proportion (due to the lower totex incentive rate) of a smaller total underspend (due to the behavioural response).

2.60 At the lower end of the range, the collective reduction in company revenue would be between £99.1m and £198.2m across sectors. This represents the scenario in which companies do not reduce levels of underspend in response to a reduction in the totex incentive rate (1:0 mapping factor).

2.61 At the opposite end of the range, the collective reduction in company revenue would be between £175.2m and £350.3m across sectors. This represents the

[53] In quantifying the impact of companies revenues we have disregarded the distinction between fast money and slow money (capitalised into the RAV). We have not modelled this factor in this Impact Assessment. Therefore our estimates in the table above should be considered an overestimate of the impact on companies' revenues.

scenario in which companies reduce their level of underspend by the same amount as their totex incentive rate was reduced compared to the counterfactual (1:1 mapping factor).

2.62 Under our central case, where companies reduce their underspend by half of the reduction of their totex incentive rate, the collective reduction in company revenue would be between £137.1m and £274.2m across the sectors.

2.63 We break these results down by sector in the tables below.

Table 13: Impact on NGGT totex revenues (gas transmission) resulting from first and second order effects (£m 2018/19, discounted)[54]

Underspend scenario	5.0% underspend		7.5% underspend		10.0% underspend	
Impact	Network companies	Consumers	Network companies	Consumers	Network companies	Consumers
Mapping 1:0	-7.2	7.2	-10.8	10.8	-14.4	14.4
Mapping 2:1	-10.2	2.1	-15.3	3.1	-20.4	4.1
Mapping 1:1	-13.2	-3.1	-19.8	-4.6	-26.4	-6.2

Note: The cells highlighted in green represent our central estimate.

Table 14: Impact on totex revenues (gas distribution) resulting from first and second order effects (£m 2018/19, discounted)[55]

Underspend scenario	5.0% underspend		7.5% underspend		10.0% underspend	
Impact	Network companies	Consumers	Network companies	Consumers	Network companies	Consumers
Mapping 1:0	-57.8	57.8	-86.7	86.7	-115.6	115.6
Mapping 2:1	-80.4	34.8	-120.7	52.3	-160.9	69.7
Mapping 1:1	-103.1	11.9	-154.6	17.8	-206.2	23.7

Note: The cells highlighted in green represent our central estimate.

[54] In quantifying the impact of companies revenues we have disregarded the distinction between fast money and slow money (capitalised into the RAV). We have not modelled this factor in this Impact Assessment. Therefore our estimates in the table above should be considered an overestimate of the impact on companies' revenues.

[55] In quantifying the impact of companies revenues we have disregarded the distinction between fast money and slow money (capitalised into the RAV). We have not modelled this factor in this Impact Assessment. Therefore our estimates in the table above should be considered an overestimate of the impact on companies' revenues.

Table 15: Impact on totex revenues (electricity transmission) resulting from first and second order effects (£m 2018/19, discounted)[56]

Underspend scenario	5.0% underspend		7.5% underspend		10.0% underspend	
Impact	Network companies	Consumers	Network companies	Consumers	Network companies	Consumers
Mapping 1:0	-34.0	34.0	-51.1	51.1	-68.1	68.1
Mapping 2:1	-46.5	11.5	-69.7	17.3	-93.0	23.1
Mapping 1:1	-58.9	-11.0	-88.4	-16.5	-117.8	-22.0

Note: The cells highlighted in green represent our central estimate.

2.64 We observe that the greatest impact on companies is in the gas distribution sector where companies would have lower revenues from lower totex incentive rates under the Draft Determinations proposals relative to the counterfactual.

Analysis of third order effect under Draft Determinations proposals

2.65 Under the second order effect, we have assumed that all of the reduction in underspends reflects lost cost efficiencies. However, a lower totex incentive rate might also reduce companies' incentives to overstate their cost forecasts as the benefits arising from overstated costs would be lower. Therefore, a reduction in underspends may represent a combination of reduced information rents and lost cost efficiencies.

2.66 The third order effect attempts to distinguish between the proportion of underspends which reflects genuine cost efficiencies and the proportion which reflects information rents. While this differentiation may not have a significant impact on company revenues, it will have potentially significant implications for consumer benefits. This is because cost efficiencies benefit consumers, who share a proportion of these efficiencies with companies via the totex incentive rate. However, information rents result in consumer transfers to companies without any corresponding benefit in return. Therefore, where reduced underspends reflect a reduction in information rents, rather than cost efficiencies, consumers will benefit. Given that we would expect information rents as well as cost efficiencies to be reduced with a change to the totex incentive rate, consumer benefit in all

[56] In quantifying the impact of companies revenues we have disregarded the distinction between fast money and slow money (capitalised into the RAV). We have not modelled this factor in this Impact Assessment. Therefore our estimates in the table above should be considered an overestimate of the impact on companies' revenues.

scenarios (other than with a 1:0 mapping factor) would increase relative to that considered above.[57]

2.67 In the draft IA, we suggested that both the level of the totex incentive rate as well as the informational tools used could impact on the third order effect.[58] Moreover, we considered that the combination of the BPI and lower totex incentive levels, set through the confidence-dependant approach, had the potential to reduce informational rents as opposed to cost efficiencies.[59]

2.68 In the previous section, paragraphs 2.27-2.32 above, we found that the BPI could have reduced the scope for upfront rewards in RIIO-2 compared to the IQI. Furthermore, the lower totex incentives rate proposed in Draft Determinations, as opposed to those that would have applied under the counterfactual, could have reduced companies' incentives to overstate their cost forecasts.

2.69 We note, however, that our analysis of historical totex performance reveals that a degree of information asymmetry has persisted in past price controls regardless of the informational tools and approach to setting the totex incentive rate utilised by the regulator.

2.70 These two findings combined suggest that it might not be possible to determine what proportion of any totex underspend can be attributed to informational rents versus genuine cost efficiencies. We therefore conclude that the third order effect relating to changes to the sharing factor is unclear.

2.71 Also in light of the findings from historical analysis, we believe that the net impact arising from the removal of the IQI and the introduction of the BPI is not possible to determine.

Summary of impacts from changes to incentives

2.72 The table below combines the results of the expected impacts from changes to the informational tool and the totex incentive mechanism under Draft Determinations proposals.

[57] See Figure 5: Illustration of the three orders of effect under the TIM (p. 51) in the Draft impact assessment.
[58] See para 4.110, Draft Impact Assessment.
[59] See para 4.110, Draft Impact Assessment.

Table 16: Summary of expected impacts from changes to totex incentive rate and informational tools under Draft Determinations proposals

£m 2018/19, discounted	Impact on the network companies	Impact on consumers
Changes to informational tools	Unclear - historical information suggest that a degree of information asymmetry persists over time and therefore companies might still earn informational rents	Unclear- consumers might not benefit from a change in tool used
Changes to totex incentive rate – central case (7.5% underspend, first and second order effects only)	-205.7	72.6
Changes to totex incentive rate - third order effect	Unclear - historical information suggests that a degree of information asymmetry persists over time therefore companies might still earn informational rents [60]	Unclear- consumers might not benefit from a change in tool used

Impacts from output delivery incentives, price control deliverables and licence obligations

2.73 We use the provision of revenues and the targeted application of financial incentives on companies to deliver certain outputs within a price control period where there is evidence of consumer value.

2.74 In SSMD, we established the RIIO-2 outputs framework for gas distribution and transmission network companies. This included the three components:

- Licence Obligations (LOs) set minimum standards that network companies must achieve.
- Price Control Deliverables (PCDs) specify the deliverable(s) for the funding allocated, and the mechanism(s) to refund consumers in the event an output is not delivered (or not delivered to a specified standard).

[60] While delivery of cost efficiencies may come at some cost to companies, we may assume that these costs are captured within company Business Plans with a corresponding impact on their totex allowances (where they are efficient). Therefore, while information rents may not come at such a cost, the company will benefit roughly equally from underspends delivered as a result of cost efficiencies as they do from information rents.

- Outcome Delivery Incentives (ODIs) drive service improvement through reputational (ODI-R) and financial incentives (ODI-F).

2.75 In Draft Determinations, we proposed to set challenging output targets, ensuring the companies build on RIIO-1 performance levels, with more stretching targets to drive improvements in RIIO-2. We also proposed to link a greater proportion of spending allowances to outputs that hold companies to account for delivery, with mechanisms in place to return funding to consumers where work is not delivered, or not delivered to a specified level.

2.76 The outputs that we proposed across our RIIO-2 Draft Determinations are either 'common' or 'bespoke'. Common outputs apply to all sectors or all companies within a sector (eg all GDNs or TOs). In contrast, bespoke outputs have been proposed by the companies and are specific to individual companies; they seek to reflect the needs of and feedback that companies received from their consumers and other stakeholders.

2.77 In this IA, we do not seek to explore the individual impacts of each LOs, PCDs, and ODIs, rather, we consider the broader impact of the Draft Determinations proposals for outputs in relation to the ones under the counterfactual.

2.78 Our analysis of each component of the outputs framework is discussed below.

Output delivery incentives

2.79 In the draft IA, we limited our analysis to the common financial ODIs under the options considered relative to the counterfactual. We provided limited commentary on the impact of bespoke ODIs given this would have required us making assumptions about what the companies were going to include in their Business Plans. Additionally, we did not quantify the impact of reputational ODIs.

2.80 The analysis of common financial ODIs was based on estimates of the rewards and penalties that we would expect to see companies achieve under three 'cases'. These ranged between a 'low case' in which companies performed poorly against targets and receive penalties in some or a number of areas and a 'high case' in which companies performed well against targets, potentially coming close to the cap on some of the incentives. The high and low cases were designed to reflect the broadest range of performance that we considered plausible and we would not expect to observe the resulting impacts on revenues for companies across sectors

under normal circumstances. We also considered a 'central case' which was based on what we considered to be a plausible scenario of company performance.

Updated methodology

2.81 For the financial ODIs, we have adopted a similar approach for this IA but we have limited our analysis to the maximum upside and downside companies could be subject to under the counterfactual and our Draft Determinations proposals.

2.82 Under the counterfactual, we assume that the same ODIs would apply as in RIIO-1, but the incentive targets would have been updated to reflect most recent data on performance while the caps and collars would have remained the same.[61]

2.83 The Draft Determinations present the ODIs that we have retained from RIIO-1, the new ODIs that we have introduced for RIIO-2 and how we have set performance targets and caps and collars. In Draft Determinations we have proposed to re-calibrate incentive targets by setting caps and collars on almost all ODIs and removing incentives which were not creating consumer value.[62]

2.84 The financial ODIs we have modelled in the IA are described in the following table.

Table 17: Financial ODIs modelled in IA

Sector	Financial ODIs in counterfactual and Draft Determinations proposals	New RIIO-2 ODIs discussed on qualitative basis in IA	RIIO-1 ODIs that have been removed for RIIO-2 and excluded from IA analysis
Gas distribution	• Shrinkage and environmental emissions[63] • Customer satisfaction survey • Complaints metric • Network Asset Risk Metric[64]	• Unplanned interruptions – average restoration time incentive	• Discretionary reward scheme • NTS exit capacity
Electricity transmission	• Timely connections • SF6 • Energy Not Supplied • Network Asset Risk Metric[65]	• Quality of Connection Survey • Bespoke Environmental Scorecard (NGET only)	• Stakeholder Satisfaction Incentive

[61] See Table 21 (p.61) of the Draft impact assessment for a full summary of the assumption under the counterfactual.
[62] See Chapter 4 of RIIO-2 Draft Determinations – Core Document: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_core_document_redacted.pdf
[63] Assessed on a qualitative basis only.
[64] Ibid.
[65] Ibid.

Sector	Financial ODIs in counterfactual and Draft Determinations proposals	New RIIO-2 ODIs discussed on qualitative basis in IA	RIIO-1 ODIs that have been removed for RIIO-2 and excluded from IA analysis
Gas transmission	• Demand forecasting • Maintenance • Residual balancing • Constraint management • Greenhouse Gas (GHG) emissions • Customer Engagement Survey • Network Asset Risk Metric[66]	• Bespoke Environmental Scorecard	• Shrinkage

2.85 As mentioned above, our updated analysis is limited to comparing caps and collars proposed in our Draft Determination proposals to those that would have applied under the RIIO-1 counterfactual.

2.86 Caps and collars can be expressed as a percentage of ex ante base revenue[67] or in absolute terms (ie £m).

- For the ODIs expressed as a percentage of base revenue, we have used the annual average base revenue proposed in the Draft Determinations for both the counterfactual and the Draft Determinations proposals, consistent with our overall modelling approach. We acknowledge however that the base revenue under the counterfactual would have been slightly higher compared to Draft Determinations proposals given that company returns would have been higher (due to the higher cost of capital). We have not attempted to quantify this difference.
- For ODIs expressed in millions we compared the caps and collars under the counterfactual to the values proposed in Draft Determinations.

Results

2.87 We present the results of our analysis in the table below.

[66] Ibid.
[67] Base revenue is the annual average value fixed at final determinations.Please see : https://www.ofgem.gov.uk/ofgem-publications/84605/glossarypdf#:~:text=B,of%20carrying%20out%20its%20activities.

Table 18: Caps and collars of common ODI-F under counterfactual and Draft Determination proposals, expressed in base revenue – annual (£m 2018/19)

Sector	Counterfactual		Draft Determinations proposals		Changes relative to counterfactual	
	Collar	Cap	Collar	Cap	Collar	Cap
Gas Distribution	-30.7	15.4	-30.7	15.4	0.0	0.0
Gas Transmission	-98.9	42.3	-14.3	11.6	84.7	-30.8
Electricity Transmission	-71.1	15.1	-78.5	7.8	-7.4	-7.3
Total	-200.7	72.8	-123.5	34.7	77.2	-38.1
Total (five-year price control period, discounted)	-938.1	340.1	-577.3	162.1	360.8	-178.0

Note: Excludes the quantitative impact of the changes to the NARM incentive for all sectors. For Gas Distribution, it also excludes the quantitative impact of the changes to the Shrinkage and Environmental emissions incentive. We have excluded these incentives from our analysis because the caps/collars could not be directly compared between the counterfactual and Draft Determinations proposals. We discuss these incentives in turn below.

2.88 Our analysis reveals that tightening ODI caps and collars under our Draft Determinations proposals results in an annual total increase of £77.2m at the collar and an annual reduction of £38.1m at the cap across all sectors. Over five years, this corresponds to an overall increase of £360.8m at the collar and a reduction of £178.0m at the cap. In other words, under Draft Determinations proposals, the potential range of outcomes at the cap and the collar has been considerably narrowed compared to the counterfactual over a five-year period. We note that these represent the maximum rewards and penalties across all companies and sectors and they do not represent plausible sector performance or company performance.

Network Asset Risk Metric (NARM)

2.89 In RIIO-1, the cap and collar for the NARM (known as NOMs in RIIO-1) was set at ±2.5% of the value of the additional or avoided costs. For RIIO-2, we have revisited the way the incentive is applied. The Draft Determinations – NARM document discusses these changes in detail. In short, the NARM has been adjusted to reflect past performance and incentivises network companies' to maintain good performance to avoid penalties. Under Draft Determinations proposals, the NARM is a penalty only ODI-F/PCD capped at 2.5% of the total

NARM funding.[68] Comparing the design of the NARM ODI-F/PCD under Draft Determinations proposals to the counterfactual suggests that the potential range of outcomes at the cap would be lower under Draft Determinations proposals (given it is a penalty-only ODI) and the potential range of outcomes at the collar could be similar or wider depending on the NARM funding/adjustment.

Shrinkage and environmental incentive

2.90 For the Gas Distribution sector, under RIIO-1 there were two separate incentives: i) a shrinkage incentive and ii) an environmental emissions incentive.

2.91 The reward/penalty for the shrinkage incentive was based on costs savings from not having to buy replacement gas, whereas the reward/penalty for the environmental incentive was for CO2 emissions avoided. The incentives did not have a cap nor a collar in place. Gas distribution companies have been able to outperform the incentives targets which has resulted in a pay out of approximately £126m in the first six years of the RIIO-1 price control; this equates to circa 0.58% of base revenue.

2.92 For RIIO-2, we have merged both incentives and rewards and penalties are capped at ±0.25% of base revenue. The recalibration of the incentive as well as the introduction of a cap and collar reduce the scope for rewards/penalties in RIIO-2. Given the scope of the incentive is narrower and more focused on what the GDNs can fully control, we expect this to result in greater consumer benefits.

Reputational ODIs

2.93 Although we have not quantified the impact of reputational ODIs (ODI-R), we expect these to result in some benefits to consumers. For instance, the reputational ODIs associated with the network companies' Environmental Action Plans and Annual Environmental Report are expected to encourage companies to deliver on their environmental commitments during RIIO-2. These commitments are expected to reduce adverse environmental impacts of gas distribution and transmission networks, and protect and enhance the natural environment for current and future consumers. We further discuss this ODI in Chapter 4.

[68] Calculated as 2.5% x (original allowance – final adjusted allowance).

Consideration of company behavioural response under Draft Determinations proposals

2.94 The quantitative analysis above only considers the impact of changes to the caps and collars of financial ODIs. It does not capture the behavioural response of companies that may result from these changes.

2.95 A reduction in the maximum rewards and penalties would only have an impact where it results in company expectation that the cap or floor is more likely to be hit, or where the cap or floor is actually reached within the price control period. Where this is the case, companies may choose to exert less effort if they believed that the marginal cost of that effort is higher than the marginal gains from the incentive or is lower than the marginal loss from the incentive. Lowering of the cap/collar when combined with tighter targets may mean that if companies exert less effort, they may, in fact, be exposed to penalties.

2.96 The precise impact on company behaviour depends on the individual output delivery incentive parameters and where the company expects its performance to lie relative to the output delivery incentive target. Companies may also exhibit risk and loss aversion, in which case they may be more driven to avoid penalties than they are to seek rewards. In this context, more stretching targets may encourage greater effort from companies due to the greater risk of missing targets and facing penalties.

2.97 Based on the design and calibration of the ODI-F package and the potential resulting behavioural response, average performance (intended sum of penalties and rewards) of companies across all sectors over the five-year price control may be around zero.

Price Control Deliverables (PCDs) and licence obligations

2.98 In our Draft Determinations, we have used price control deliverables (PCDs), where appropriate, to specify outputs that are directly funded through the price control. PCDs have specific revenue allowances assigned to them and strengthen the mechanism linking price control allowances to delivery of outputs in comparison to RIIO-1 counterfactual. There are two types of PCDs: i) common PCDs that are applicable to all companies within a sector; and ii) bespoke PCDs put forward by each company that are specific to that company.

2.99 In our Draft Determinations proposals, approximately 50% of baseline totex across gas distribution and transmission sectors is linked to uncertainty mechanisms and PCDs (common and bespoke). We recognise that over-specifying price control outputs can reduce companies' abilities to innovate and find more efficient solutions to deliver outcomes that benefit consumers but this is likely to be offset by the fact that PCDs ensure companies are only paid for what they deliver. In other words, companies would retain their allowance for the PCDs they deliver while consumers only fund activities that are actually delivered.

Licence obligations

2.100 Under our Draft Determinations proposals, we updated existing minimum standards and have set new minimum standards as well; for example, the new common LOs for Modernising Energy Data and Environmental Action Plan and for their Annual Environmental Reports. As a result of this, we have also considered whether an increase in related cost allowances or existing payments is required to meet stricter minimum standards. This has been accounted for in the totex baseline. Overall, we would expect our approach to LOs to generate some benefits to consumers. However, we consider that these benefits would not be additional as the changes proposed in Draft Determinations would have also occurred under the counterfactual.

Bespoke outputs

2.101 In the SSMD, we said that there would be opportunities for network operators to propose bespoke outputs for RIIO-2 – a feature that was not included in the RIIO-1 framework and therefore would not be present under our counterfactual.

2.102 In the draft IA, we provided limited commentary on the impact of bespoke outputs given this would have required us making assumptions about what the companies would include in their Business Plans.

2.103 In their Business Plans, companies proposed over 200 bespoke outputs[69] across all sectors. In Draft Determinations, we propose to retain 35 bespoke outputs[70] of

[69] Please see RIIO-2 Draft Determinations - Core Document, para 2.10.
[70] Ibid, para 4.15.

which three are bespoke ODI-F and the remaining are ODI-R, PCDs, LOs, or use-it-or-lose-it allowance.[71]

Bespoke Financial ODIs

2.104 The three bespoke ODI-F we have proposed to accept apply to NGET, NGGT and Cadent North London. For NGET and NGGT, we proposed introducing a Bespoke Environmental Scorecard ODI. This ODI is symmetrical and National Grid has proposed the following caps and collars: ± £4.0m p.a. for NGET and ±£2.5m p.a. for NGGT.

2.105 For Cadent North London, the proposed bespoke ODI-F is for unplanned interruptions and they have proposed setting it at -0.25% of base revenue p.a.

2.106 We have not attempted to quantify how companies might perform under the three bespoke ODI-F which have been proposed. However, we note that companies might benefit financially if the cost of delivering those is significantly lower than the reward they will be receiving under the caps and collars proposed. Further, we observe that calibrating new bespoke outputs might be challenging given that these are company-specific and Ofgem cannot rely on historic information or comparative analysis to inform setting of targets and caps and collars. For these reasons, bespoke financial ODIs could result in a company earning all of the upside reward.

Bespoke reputational ODIs

2.107 As mentioned above, Ofgem has proposed to retain 32 bespoke reputational ODIs. In this document, we have not attempted to quantify benefits associated with those nor have we attempted a qualitative assessment. Overall, we would expect these outputs to result in some benefits to consumers. We note however, that under our Draft Determinations proposals, in some instances, a reputational ODI will be replacing a financial one, such as in the case of the Stakeholder Engagement Incentive[72]. We discuss in Chapter 5 a reputational ODI aimed at reducing environmental impacts associated with network activities.

[71]Please see Draft Determinations – Core Document, Chapter 4 where we explain our approach to bespoke outputs, the rationale for introducing them and our proposal to allow a number of well-justified bespoke outputs and the reasoning for proposing not to take forward a considerable proportion of bespoke proposals as RIIO-2 outputs.
[72] Please see RIIO-2 Draft Determinations - Core Document, para 4.37.

Summary of impacts resulting from outputs framework

2.108 Under Draft Determinations proposals, as a result of our re-calibration of common financial ODIs, the potential for rewards and penalties associated with output delivery incentives has been considerably tightened relative to the counterfactual. We have limited our analysis to comparing caps and collar under the counterfactual to those proposed at Draft Determinations. We consider that the average performance across sectors (the sum of rewards and penalties) over the five year-price control may be around zero.

2.109 For bespoke Financial ODIs, companies might benefit financially if the cost of delivering those is significantly lower than the reward they will be receiving under the caps and collars proposed. Because of limited comparability and historical information, bespoke financial ODIs could result in a company earning all of the upside reward.

2.110 Overall we would expect reputational ODIs and PCDs to result in some benefits to consumers.

Table 19: Impacts of ODIs, PCDs and LOs on consumers and company revenues under Draft Determinations proposals relative to counterfactual

Output delivery incentives	Draft Determinations proposals: impact on base revenues over five years	
	Network companies	Consumers
Financial Common ODIs	Recalibration of targets and narrower caps and collars range might lead to average performance of zero across all sectors	Consumers might benefit if combination of recalibrated targets and narrower performance does not affect delivery of outputs. Benefits might reduce where companies reduce delivery of outputs
Bespoke Financial ODIs	Not quantified - Companies might benefit from additional rewards	Not quantified - Consumers might benefit from delivery of additional outputs. However, because of limited comparability and historical information they might be paying more than needed.
Reputational ODIs and PCDs	Not quantified - Potential for reduction in company revenues if they do not deliver. Incentives to deliver reputational ODIs	Not quantified – Consumers only fund activities that are delivered
LOs	Not quantified – no change	Not quantified – no change

Impacts from changes to efficiency adjustments

Impacts resulting from changes to ongoing efficiency

Counterfactual and Draft Determinations proposals

2.111 We have been considering the appropriate ongoing efficiency adjustment to apply to most of the cost base, both in the transmission and gas distribution sectors in the next regulatory period. In deriving this efficiency adjustment, we have used a similar methodology as in RIIO-1, updated to account for the most recent productivity data available from EU KLEMS.

2.112 Analysis undertaken on our behalf by CEPA, suggests that an appropriate range for ongoing efficiency using this methodology is 0.6 - 1.0% for capex and repex (GD only), and 1.0 - 1.2% for opex. This position represents our counterfactual for the IA.

2.113 Under our preferred approach, as set out in Draft Determinations[73], we propose an additional challenge to account for the ongoing efficiency gains we expect as a result of additional innovation investments made in RIIO-1. CEPA's analysis suggests that by taking into account a greater range of factors, the appropriate range of ongoing efficiency is 0.5 - 1.2% for capex and repex and 0.7 - 1.4% for opex. This results in an additional 0.2% compared to the counterfactual.

Methodology

2.114 The impact is measured by taking the difference between the estimated totex allowance under the counterfactual and the totex allowance calculated using the additional 0.2% adjustment.

Estimates of impacts

Table 20: Impact of changes to ongoing efficiency rate compared to counterfactual – annual figures (£m, 2018/19, discounted)

Sector	2021/22	2022/23	2023/24	2024/25	2025/26	Sum (discounted)
Gas distribution	-15.49	-19.95	-22.68	-25.44	-27.81	-111.4
Gas transmission	-1.8	-2.4	-2.8	-3.0	-3.4	-12.4
Electricity transmission	-8.94	-12.32	-12.29	-13.84	-14.41	-57.4
Total	-26.27	-34.70	-37.77	-42.24	-45.60	-172.9

Impacts resulting from changes to benchmarking efficiency

2.115 In RIIO-1, we used the upper quartile (75th percentile) to calculate the efficient level of costs to form our totex modelling for gas distribution companies. This results in less efficient companies facing a catch up efficiency challenge relative to more efficient companies. We did not apply this adjustment in the transmission sector as we do not use econometric modelling to establish efficient costs in that sector.

[73] See paragraphs 5.34-5.37, RIIO-2, Draft Determinations, Core Document.

2.116 We note that all GDNs have consistently outperformed their cost allowances for the RIIO-1 period to date, while generally delivering a good quality of service[74]. Overall for the GDNs, actual totex over the period 2013-14 to 2018-19 is on average 14% lower than RIIO-GD1 allowed costs, and 25% lower than RIIO-GD1 final Business Plan submissions.

2.117 In the next regulatory period, for the reasons discussed in Draft Determinations[75], we propose to set the efficiency frontier at the 85th percentile. This is approximately equivalent to setting it at the level of the 2nd most efficient company, and provides an extra 2% cost challenge to the GDNs as compared to the upper quartile, under the counterfactual.

Methodology

2.118 We have quantified in the table below the impact of the change on companies' totex allowances in the distribution sector. The figure has been derived as the difference between applying the new efficiency benchmark (85th percentile) and the 75th percentile to our modelled costs from regression analysis.

2.119 The figures provided therefore captures the difference between the two views of efficient costs at the sector level.

Table 21: Impact of changes to benchmarking efficiency compared to counterfactual on totex allowances– annual figures (£m, 2018/19, discounted)

Sector	2021/22	2022/23	2023/24	2024/25	2025/206	Total	Total (discounted)
Gas distribution	-37.6	-37.2	-36.7	-35.3	-34.8	-181.6	-170.0

[74] This is shown in the RIIO-GD1 annual reports, which highlight continuous efficiency improvements. https://www.ofgem.gov.uk/system/files/docs/2020/02/riio-gd1_network_performance_summary_2018-19_0.pdf

[75] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_gd_sector_0.pdf para 3.24 to 3.29, p 87.

Other impacts on companies and consumers

Impacts resulting from the introduction of a Return Adjustment Mechanism (RAM)

2.120 Under Draft Determinations proposals, we have introduced a Return Adjustment Mechanism that would apply as an adjustment to an individual company's performance if it exceeds certain thresholds. In other words, if a network company exceeds a pre-defined level of RoRE, then we would adjust its returns according to the approach set out in the Draft Determinations.

2.121 In the Draft Determinations, we have proposed that RAMs would operate where company returns measures in RoRE exceed threshold levels of ±300 basis points either side of the baseline allowed return on equity.[76]

2.122 Under the counterfactual, there would be no RAM.

Updated methodology

2.123 In the draft IA, we carried out analysis to consider if the RAM would be triggered under our proposals across all three sectors and under a number of scenarios.

2.124 In this IA, we have updated our analysis of the likelihood of RAMs being triggered in RIIO-2 as follows:

- as RAMs encapsulates performance under the TIM and ODIs, we calculate the level of under or overspend that would need to occur in RIIO-2 in order to generate a RoRE that would meet the RAMs threshold under different ODI performance scenarios and for a range of totex:RAV ratios and TIM incentive rates. Under RAMs Scenario 1, we assume that RoRE derived from ODI performance is zero and RoRE derived through TIM performance is 300 basis points. Under RAMs Scenario 2, we assume that RoRE derived from ODI performance is 100 basis points and RoRE derived through TIM performance is 300 basis points.[77]

[76] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf para 8.16 p 139.
[77] So, in both scenarios, combined TIM and ODI performance equals 300 RoRE basis points, which is the RAMs threshold level.

- Using the totex performance database (see paragraphs 3.120-3.124 of the Draft Determinations finance annex) we can infer the potential likelihood of this level of under or overspend being achieved.

Table 22: Description of assumptions used in our analysis of RAM for Draft Determinations proposals

Parameter	Assumption
Company under/overspend levels	See table below
Totex:RAV ratio	See table below
TIM Incentive rate	See table below
ODI performance	0% / 1% RoRE derived through ODI performance
Gearing	60%
RAM threshold proposed	±300 bps either side of the baseline allowed return on equity

Results

2.125 Table 23 and table 24 show the level of under or overspend that would need to be achieved in RIIO-2 in order to generate a return of 300 RoRE basis points from TIM and ODIs combined.

2.126 The totex:RAV ratios and TIM efficiency incentive rates presented in these tables cover plausible ranges of values for these parameters in RIIO-2.

Table 23: RAMS Scenario 1: zero ODI performance, 300 RoRE bps TIM performance

		Totex efficiency incentive rate				
		30%	**35%**	**40%**	**45%**	**50%**
Totex:RAV ratio	**6%**	67%	57%	50%	44%	40%
	7%	57%	49%	43%	38%	34%
	8%	50%	43%	38%	33%	30%
	9%	44%	38%	33%	30%	27%
	10%	40%	34%	30%	27%	24%
	11%	36%	31%	27%	24%	22%
	12%	33%	29%	25%	22%	20%

Table 24: RAMS Scenario 2: 100 RoRE bps ODI performance, 300 RoRE bps TIM performance

		Totex efficiency incentive rate				
		30%	**35%**	**40%**	**45%**	**50%**
Totex:RAV ratio	**6%**	44%	38%	33%	30%	27%
	7%	38%	33%	29%	25%	23%
	8%	33%	29%	25%	22%	20%
	9%	30%	25%	22%	20%	18%
	10%	27%	23%	20%	18%	16%
	11%	24%	21%	18%	16%	15%
	12%	22%	19%	17%	15%	13%

2.127 By way of example, the tables can be interpreted as follows: under RAMs scenario 1, where the totex:RAV ratio is 10% and the TIM efficiency incentive rate is 45%, a totex under or overspend of 27% would be required in order to generate a RoRE of 300 basis points.[78]

2.128 Across both scenarios, we can see that the upper and lower values are 67% in RAMs scenario 1 and 13% in RAMs scenario 2. That is to say, a company would need to achieve *both* an under/overspend of 13% and a return of 100 RoRE bps (basis points) via ODIs in order to meet but not exceed the RAM thresholds.

2.129 Looking to the totex performance database, there are no observations of totex performance that exceed the 67% upper value. Rounding the lower figure to 15%, we see that 82% of the observations in the database fall within the under/overspend range of ±15%.[79]

2.130 We believe that it is therefore reasonable to assume it unlikely that the RAMs threshold will be met by any company in RIIO-2 and that the impact of the RAMs on company profits is likely to be zero.

[78] The figures in Table 23 and 24 are calculated using the following formula:
Under/overspend required in order to generate X% RoRE = X% - (Gearing x X%) / (Totex:RAV ratio x TIM efficiency incentive rate)

[79] That is, 172 of the 210 observations (172/210=82%). This includes all price control observations within the database, across the gas, electricity, water and aviation sectors. If we consider only performance within the gas and electricity sectors, 91 of the 127 (91/127=72%) observations fall within the within the under/overspend range of ±15%.

Qualitative analysis of the RAM

2.131 We note that the analysis above does not incorporate potential impacts on company behaviour that may arise from the totex incentive rate, additional uncertainty mechanisms and the BPI.

2.132 We acknowledge that the RAM is effectively a form of implicit profit sharing and that, combined with shorter price control periods could in theory reduce the incentive for companies to seek efficiencies. However, we do not anticipate that the sculpted sharing scenarios set out in the indicative analysis above would result in a change in company behaviour given the very low likelihood of the RAM being applied.

Summary of impacts from the introduction of a RAM

2.133 Based on the updated analysis above, we consider that the impact of the RAM on company profits is still likely to be zero. We note that this is same conclusion we reached in our draft IA.

Impacts from funding of innovation

2.134 Our Draft Determinations proposals describe our current position in relation to innovation funding for the next regulatory period.[80]

2.135 A new Strategic Innovation Fund (SIF) would replace the Network Innovation Competition (NIC). This would support high value, strategic innovation projects and increase alignment between network innovation and other publicly funded innovation to support the transition to Net Zero. We are proposing to make available a level of total funding from the SIF equivalent to that provided via the RIIO-1 Network Innovation Allowance, which was £450m, and may increase this if necessary.

2.136 We also propose to provide all companies with Network Innovation Allowance (NIA) funding in RIIO-2 (as detailed for individual companies in table 12 in the Draft Determinations Core Document). In total, the proposal is to make available approximately £182m of NIA funding for the network companies over the RIIO-2 price control. This is comparable to the level of NIA funding we made available in

[80] Please see Chapter 8 in Draft Determinations Core Document: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_core_document.pdf

RIIO-1 in which around £40m of NIA funding was available each year for GD, GT, and ET.

2.137 This funding is conditional on companies implementing an improved, industry-led reporting framework by the start of RIIO-2. This will, among other things, track the benefits from innovation funding. Companies have already collectively made some progress on and plan to introduce this benefits reporting framework to track the benefits from innovation spending in RIIO-2 transparently.[81]

Summary of impact from funding of innovation

2.138 The overall size of the proposed Network Innovation Allowance and proposals for the Strategic Innovation Fund are very similar to the funding that Ofgem made available in RIIO-1. Therefore, we consider that there is no material difference between the counterfactual and our Draft Determinations proposals. As a result, the impact on network companies and consumer bills is zero. We note however that there are potential longer-term benefits from the RIIO-2 SIF, as the funding is aimed at supporting high value, strategic innovation projects.[82] Additionally, the new reporting framework that we are requiring companies to introduce will help us track the benefits of this funding over time.

Table 25: Impact of innovation funding on company revenues and consumers under Draft Determinations proposals over a five-year price control

Impact	Draft Determinations proposals
Changes to innovation package	No change

[81] ENA Benefits Reporting Framework – Delivery Plan, December 2019; https://www.energynetworks.org/assets/files/ENA%20Benefits%20Reporting%20Framework%20-%20Delivery%20Plan%20v6%20-%20Clean.pdf

[82] The potential benefits of NIA funding was noted in Poyry's evaluation of the LCN Fund; https://www.ofgem.gov.uk/system/files/docs/2016/11/evaluation_of_the_lcnf_0.pdf

Impacts arising from increasing competition

2.139 Under Draft Determinations proposals, Ofgem will introduce late and early competition models across the electricity transmission and gas sectors, subject to a number of eligibility criteria.

2.140 Under the counterfactual, the late competition model would only apply to the ET sector and there would not be any early competition model.

2.141 In the draft IA, we considered that the introduction of these forms of competition 'for the market' might result in a reduction of revenues and profits for the incumbent network companies and lead to bill savings to consumers. We also considered that these models could result in lower administrative costs for network companies.

2.142 A number of projects, which might be suitable for late and early competition models, have been identified through the assessment of business plans submitted by companies and through the NOA process.[83] However, there is still uncertainty on the need for these projects and we note that they are subject to uncertainty mechanisms.

2.143 Given the uncertainty around these mechanisms being triggered during RIIO-2 the resulting impact cannot therefore be assessed at this time. Nevertheless, we would expect that increasing competition for large separable investment projects would put downward pressure on costs and deliver more innovative solutions. As such, we would expect to see a positive benefit for consumers arising from increasing competition relative to our counterfactual scenario.

Table 26: Impact of increasing competition under Draft Determinations proposals over a five-year price control

Impact	Draft Determinations proposals
Changes to competition	Not quantified – uncertain, but likely to result in consumer benefit and in a reduction to network companies revenues if projects are approved

[83] Please see Chapter 9 - Increasing competition, Draft Determinations, Core Document for further details.

Administration and resource costs

2.144 Our assessment of resource and admin costs is largely unchanged compared to the draft IA. We still consider that the introduction of new tools such as the BPI and bespoke outputs, compared to the counterfactual might have resulted in additional admin and resource costs for both Ofgem and network companies.

2.145 We also note the large number of uncertainty mechanisms, which have been proposed in Draft Determinations, including the scope for re-openers. We consider that similar uncertainty mechanisms would have been adopted under the counterfactual and therefore we conclude that there would not be any change in admin and resource costs in relation to these mechanisms.

Summary of impacts on companies and consumers resulting from changes in administrative costs

2.146 Overall, we consider that the impacts resulting from other areas of this impact assessment are likely to have a more significant impact on company revenues. Nonetheless, consistent with the draft IA, we consider that the introduction of new tools under our SSMD and Draft Determinations proposals would have resulted in some additional resource and admin costs for Ofgem and network companies and these would be passed to consumers through higher network charges.

Table 27: Impact of changes in administration costs on company revenues and consumers, over a five-year price control

Impact of administrative and resource costs	Draft Determinations proposals
Uncertainty mechanisms	Not quantified – some increase in administration and resource costs due to new tools introduced but no change compared to counterfactual in relation to uncertainty mechanisms

3. Bill estimation, distributional and other impacts in the next regulatory period

This chapter presents our updated analysis of distributional impacts of on consumers and other impacts, such as on the environment, in the next regulatory period.

Summary of distributional and other impacts in the next regulatory period

Indicative bill impacts

3.1 We have calculated an indicative bill impact arising from our Draft Determination proposals.

3.2 This indicative bill impact is derived from our LiMO models.[84] and estimates the change in average bills from RIIO-1 to the RIIO-2 and takes into all our Draft Determinations proposals. We calculated that consumers would achieve savings of £20 per household based on medium typical domestic consumption values, compared to the average bill in RIIO-1. This estimate takes into account the cost of debt. We provide further detail on the cost of debt estimation and its impact on Net Present Value in Appendix 1.

3.3 For our distributional analysis, discussed below, we have used this indicative bill impact estimate. Of the total £20 savings, £19 can be attributed to gas networks and £1 to electricity transmission.

Distributional impacts

3.4 The identified bill impacts at medium typical domestic consumption value (TDCV), discussed above, allow us to calculate the distributional impacts of our Draft Determination proposals[85] on different groups of domestic consumers (groups that

[84] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_technical_annexes_part_one.zip

[85] As discussed above, for the distributional analysis we have used an indicative bill impact which includes the cost of debt but excluded it from our NPV estimates in Chapter 2. For the reasons discussed in Appendix 2, we believe that it would not be appropriate to include the cost of debt into our NPV estimate as the lower cost of debt in the RIIO-2 period could be largely attributed to changes to the level of interest rates and not the specific changes to methodology applied by Ofgem.

GEMA are required to have regard to by legislation, groups covered in our Consumer Vulnerability Strategy, Consumer Archetypes). As savings are different for electricity and gas bills, we carry out two separate analyses.

3.5 The model used to calculate distributional impacts assumes a linear relationship between three levels of consumption points. This assumption is appropriate for cases where the savings on the final unit price of energy is constant with respect to consumption. This model assumes that no matter the level of consumption, the level of savings will be proportionate.

3.6 Our model does not distinguish between fixed charges and variable costs. Therefore, as we do not know the proportion of savings that can be attributed to fixed costs, we can expect an underestimation of savings at the lowest consumption levels and an overestimation of savings at highest levels of consumption.

3.7 For gas, the bill impacts for the medium TDCV (12,000 kWh)[86] reaches £19 savings per household. For electricity, the bill impacts for the medium TDCV (2,900 kWh)[87] reaches £1 saving per household. However, we expect different saving levels on distinct consumer groups. We can expect on gas and electricity bills respectively, an average bill decrease of between £28 and £6 per consumer for the consumer types listed below (Table 27).

3.8 The figure below (table 27) details the distribution of the savings per categorical consumer group. Equity adjusted results capture the fact that an additional unit of income improve the welfare of a low-income household more than that of a higher income household.

[86] https://www.ofgem.gov.uk/gas/retail-market/monitoring-data-and-statistics/typical-domestic-consumption-values
[87] https://www.ofgem.gov.uk/gas/retail-market/monitoring-data-and-statistics/typical-domestic-consumption-values

Table 28: Savings on gas and electricity bills per consumer type

Consumer type	Gas average savings	Gas equity adjusted results	Electricity average savings	Electricity equity adjusted results
Pensionable age	£22	£28	£1	£1
Disabled	£23	£28	£1	£1
Rural areas	£25	£24	£1	£1
No internet access	£21	£40	£1	£2
Unemployed	£23	£38	£1	£2
Lone parents	£21	£39	£1	£2
All	£23	£23	£1	£1

3.9 The figures below detail the impacts as a percentage of income per income decile for the three vulnerable consumer type groups. Everything being equal, as expected, the bottom deciles will experience higher savings in energy spend as percentage of income than the top deciles.

Figure 1: Impact on gas bills as a percentage of income

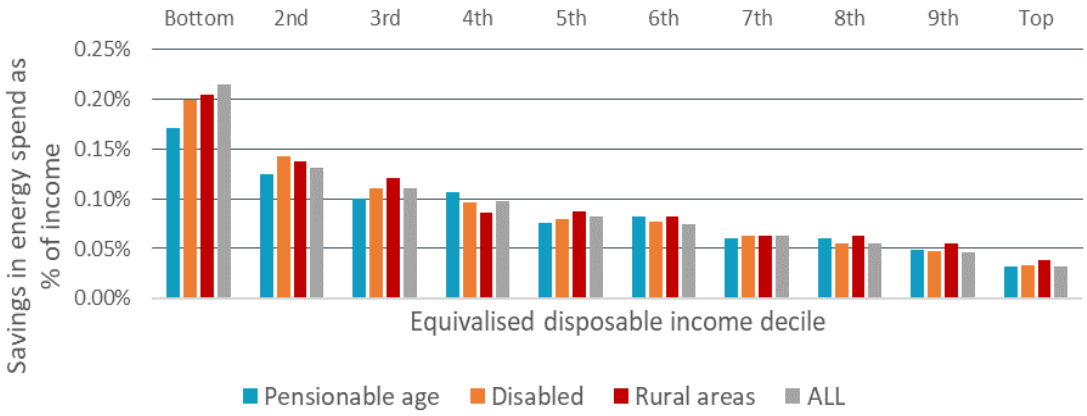
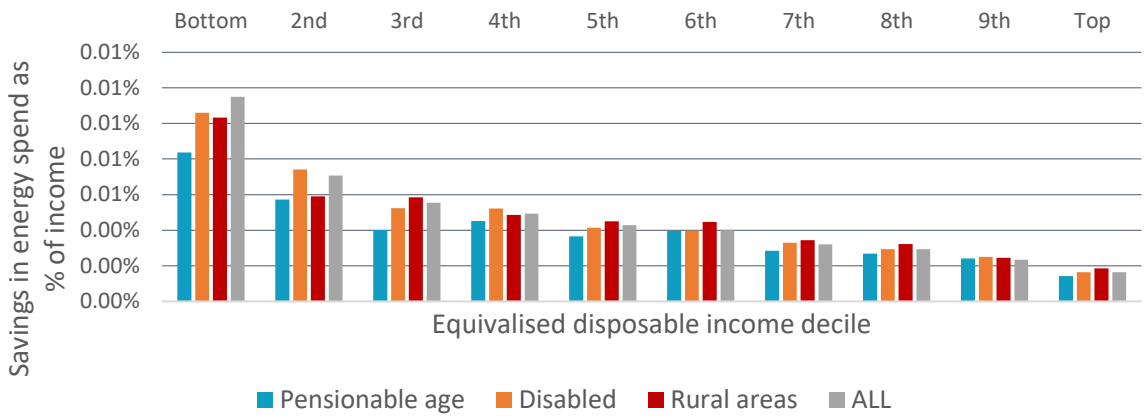


Figure 2: Impact on electricity bills as a percentage of income



3.10 The distributional impact framework has been developed for the purpose of identifying the level of savings per archetype profile.[88] The savings are expected to be different due to the difference in average income, average energy expenditure and heating fuel. The category D7 is mainly described as high usage consumers with above average incomes, and therefore the savings will reach on average nearly £27 per household, both fuels included. However, the category C5, described as very low incomes, disengaged with prepayment meters save up to £19 per household, both fuels included. The figure below (Table 29) sums-up the extent of the average savings for each fuel and each archetype profile. The last four archetypes are characterised by being off-gas. Therefore, they are the groups that will overall experience the least savings.

[88] https://www.ofgem.gov.uk/system/files/docs/2020/05/ofgem_energy_consumer_archetypes_-_final_report_0.pdf

Table 29: Savings on gas and electricity bills per archetype

Archetype	Gas average savings	Electricity average savings
A1	£15.28	£1.12
A2	£32.49	£1.70
B3	£24.30	£1.27
B4	£24.75	£1.41
C5	£17.84	£0.89
D6	£19.54	£1.35
D7	£24.70	£1.43
E8	£18.92	£1.25
E9	£16.53	£1.10
F10	£0.00	£1.98
G11	£0.00	£1.81
H12	£0.00	£1.39
H13	£0.00	£1.85

Other impacts

Impact on the environment

3.11 Ofgem's IA guidance[89] requires us to consider the likely environmental effects arising from implementing a proposal, including reduction of greenhouse gases emissions on current and future consumers.

3.12 Below we consider the environmental impacts arising from a common environmental framework across all networks and proposals relating to meeting the targets for Net Zero, as proposed in our Draft Determinations.

Common Environmental Framework

3.13 In the draft IA, we made our assessment on the basis that Ofgem would introduce a common environmental framework across all energy network sectors. The framework would focus on both reducing network companies' own environmental impacts as well as supporting the transition to a smarter, more flexible and sustainable low carbon energy system.[90]

[89] Please see Impact Assessment Guidance: Measuring policy effects on the pathways to Net Zero, page 21.
[90] Please see para 5.103 of draft IA.

3.14 In the SSMD, Ofgem required all gas distribution and transmission companies to include an Environmental Action Plan (EAP) as part of their business plan submissions and to set out their plans to address the key impacts of their network on the environment.[91]

3.15 In our Draft Determinations document[92], we have set out our latest proposals, which involve the creation of a reputational ODI for business carbon footprint for each company and reporting on progress made on other environmental commitments relating to recycling and waste, embodied carbon, supply chain, natural biodiversity and natural capital. In the AER, each company will report on the environmental impact of its network, the progress made in delivering its EAP during RIIO-2, and its contribution to the low carbon energy transition.

3.16 These latest developments, under our Draft Determinations proposals, represent a marked change to the environmental framework that Ofgem applied in RIIO-1 and as explained below, are likely to result in a significant reduction of greenhouse gases emissions, compared to the RIIO-1 period. All companies have included actions to reduce their business carbon footprint in their Environmental Action Plans. If achieved, these will reduce the greenhouse gas emissions associated with transmission and gas distribution networks by 1.7m tonnes of CO2 equivalent emissions. This represents a 34% reduction compared to 2018/19 levels.

3.17 It is difficult to quantify all of the potential environmental benefits of the RIIO-2 EAPs. Nonetheless, we expect to see improvements in many areas, including: protecting and enhancing the natural environment, driving sustainable practices up the supply chain, sustainable resource use and waste reduction. As the network companies adopt environmental performance metrics in these areas, to establish baseline data and measure changes over time, the ability to quantify the effect of the network companies' EAP commitments should improve.

3.18 We consider that under the counterfactual Ofgem would have made the same improvements to the common environmental framework as under our Draft Determinations proposals. Achieving the Net Zero targets under the counterfactual would have required improvements to the framework, which would have been consistent with the changes proposed under our Draft Determinations proposals.

[91] Please see SSMD Core Documents, paragraphs 7.14-7.17.
[92] Please see RIIO-2 Draft Determinations – Core Document, para 2.59 and table underneath.

3.19 Additionally we note that legislation for Net Zero would have occurred under any regulatory option Ofgem could have adopted for regulating network companies in the next regulatory period.

Net Zero

3.20 We noted in paragraphs above that we are introducing new mechanisms for facilitating Net Zero targets, both under the counterfactual and in our Draft Determinations proposals.

3.21 In our Draft Determinations, we acknowledged that investment in the energy networks is likely to need to rise, perhaps significantly, to meet Net Zero.[93] We consider the mechanisms that have been proposed to allow funding for new investment to be released during the next regulatory period in Chapter 7.

3.22 Here we consider whether achieving the Net Zero targets will result in a change in greenhouse gases emissions compared to the counterfactual.

3.23 As investment in the networks to achieve Net Zero would arise both under our Draft Determinations proposals and under the counterfactual, we consider that there would be no change in greenhouse gases.

3.24 Further, we note investment in the networks[94] has enabling and indirect effects as it allows reductions in greenhouses gases to be realised in other parts of the energy value chain, such as in case of connecting low carbon generation the electricity transmission network.

[93] See Draft Determinations – Core Document, paragraphs 3.1-3.2.
[94] Here we refer to investment that either increases available capacity in the network or that allows connection to low carbon generation.

4. Impacts beyond the next regulatory period

This chapter presents our updated analysis of the impacts of our options on network companies and consumers, which go beyond the next regulatory period.

Impacts on companies and consumers

4.1 Our analysis of impacts beyond the next regulatory period is largely unchanged compared to that presented in the draft IA we published in June 2019. There are four areas where our analysis required updating:

- medium-term strategic impacts relating to moving from RPI to CPIH for RAV Indexation;
- medium-term strategic impacts relating to network resilience;
- medium-term strategic impacts relating to changes to the depreciation policy applied to gas transmission network assets;
- longer-term impacts relating to environmental sustainability.[95]

Medium-term impacts

Indexation of RAV and allowed return to CPIH

4.2 The impact of the switch from RPI to CPIH is value neutral in the long run. The higher cost of capital awarded under CPIH leads to higher bills in the early years but is offset in the long run by the slower growth of the RAV. The long run effects therefore have NPV equal to 0. We do not attempt to re-estimate medium term impacts here and refer the reader to the analysis presented in the draft IA.[96]

Change to depreciation policy for gas transmission

4.3 The effect of the depreciation change increases company revenues and customer bills in the RIIO-2 period. However the total amount of depreciation does not change. Therefore the change is value-neutral for both investors and consumers.

[95] See Ofgem's discussion paper: Strengthening strategic and sustainability considerations in Ofgem decision making.
[96] Please see pages 96-97 for a discussion of the medium-term impact of the switch to CPIH.

Network Resilience

4.4 Due to the long operating life of network assets, the impact of any shortfall in asset management activities may not be directly observable within a price control. Under the counterfactual we have assumed that the level of allowances for maintaining existing assets would have been the same as under our Draft Determinations proposals.

4.5 We note that totex for asset maintenance requested by transmission companies in the next regulatory period was noticeably higher than the amounts which have been allowed by Ofgem at Draft Determinations.

4.6 Our proposed allowances are based both on historical data as well as engineering evaluation. We do not expect lower allowances than requested by companies to result in a deterioration of asset health and to undermine long-term resilience.

4.7 The use of PCDs and NARM to ensure that companies deliver what they say thet will should mitigate the potential for companies to underinvest in network resilience in order to maximise short-term returns within the price control period at the expense of long-term asset resilience.

Longer-term impacts

Environmental sustainability

4.8 We consider that the environmental framework proposed under Draft Determinations proposals will benefit consumers over the long-term. As network companies adopt environmental performance metrics for carbon footprint and other commitments for reducing environmental impacts in other areas[97], establishing a baseline and measuring change over the time would become easier. This would enable the quantification of environmental impacts over time.

4.9 It will also give greater transparency to stakeholders and consumers on the level of responsibility the network owners are taking for reducing their impacts on the environment and contributing to wider government and societal goals. Lastly, it

[97] Please see para 2.59 and table underneath in Draft Determinations Core documents for further details on the outputs and environmental commitments in different areas.

will provide solid foundations for improving robust output delivery incentives beyond the next regulatory period.

Summary of impacts beyond the next regulatory period

4.10 Changes to depreciation policy for gas transmission and the switch to CPIH, as proposed in Draft Determinations, will be value-neutral to both network companies and consumers in the long-run.

4.11 We consider that the environmental framework proposed in Draft Determinations will have positive longer-term impacts as it would allow the establishment of a baseline, against which future changes could be measured. It will also provide solid foundations for improving robust output delivery incentives beyond the next regulatory period.

4.12 We do expect any changes in network resilience arising from our Draft Determinations proposals.

5. Risks and uncertainties

This chapter presents our updated consideration of the main risks and uncertainties associated with Draft Determinations proposals as opposed to the counterfactual.

5.1 The implementation of Draft Determinations proposals inevitably presents some risks and potential for unintended consequences, especially in areas where we are introducing new mechanisms.

5.2 We discuss below uncertainties associated with some of the quantified impacts presented in Chapter 3, the potential for some unintended consequences, and risk allocation between consumers and companies.

Uncertainty

5.3 In our Draft Determinations proposals, we have applied a number of new tools for the first time; in particular the BPI and the confidence-dependent incentive rate approach for determining the incentive rate. Below we discuss some of the uncertainty associated with these new mechanisms and other sources of uncertainty.

Uncertainties in quantified benefits

5.4 Some of the consumer benefits that we have identified throughout this IA are dependent on assumptions, many of which relate to how companies might respond to the tools and parameters proposed within the options. Where these assumptions do not hold, some of these consumer benefits might not materialise. To some extent, we have already seen how companies have responded to some of these tools by assessing their RIIO-2 Business Plans and have revised the IA accordingly. Company performance throughout RIIO-2 will ultimately reveal the extent of those consumer benefits. We discuss below specific areas of uncertainty within our methodologies and describe the analysis we have undertaken:

- **Changes to level of incentive rates**: Our analysis demonstrated that the extent of consumer benefit will depend on the behavioural response of companies to lower incentive rates. We observed that lower incentive rates, with a mapping factor close to 1:1 could result in negative consumer benefits.

- **Approach used to set incentive rates/informational tools**: Under Draft Determinations proposals, we have use the BPI as an informational tool whereas under the counterfactual we would have used the IQI. We considered the net effect of this change in Chapter 2. The approach used to calculate the upfront reward/penalty under the counterfactual results in upfront penalties for most network companies in contrast to the IQI mechanism that results in upfront rewards. We noted that the combination of the Confidence Dependent Incentive rate and Business Plan Incentive are untested and have been applied for the first time. This coupled with the evidence on historical totex underspend presented in the Finance Annex and in Chapter 3 suggests that it might not be possible to determine the net impact arising from the removal of the IQI and the introduction of the BPI.

5.5 In practice, there could also be some unintended consequences arising from other changes. We have identified the following:

- **Bespoke Financial output delivery incentives:** While bespoke outputs should allow more targeted delivery of outputs that companies can demonstrate are in the interest of their consumers, they come with implementation challenges. The challenges associated with the implementation of bespoke outputs stem from the calibration and targets to be set without comparative or historic information on such output.
- **Investing in the future**: Some companies have argued that the combination of lower totex incentive rates and a lower cost of capital may lead to increased short-termism, with reduced investment in innovation and adoption of new technologies. We consider that other mechanisms in place should be sufficient to stimulate investment in technologies that can drive cost efficiencies and deliver for both existing and future consumers. These include innovation funding and wider Net Zero investment mechanisms, including the Net Zero reopener.

Risk allocation

5.6 The design of RIIO-1 was intended to provide a relatively high risk and high reward regulatory framework that would incentivise network companies to deliver better outcomes for consumers and allow the best performing companies to earn high revenues. Company performance within RIIO-1 to date suggests that the

RIIO-1 framework has provided network companies with more upside potential than downside risk.

5.7 Under our Draft Determinations proposals, we have sought to re-balance risk and reward. Below we discuss measures that reduce network companies' exposure to risks that are outside their control. These include mechanisms such as volume drivers, indexation and re-openers.

Impacts resulting from shorter price control and use of uncertainty mechanisms and price control deliverables

5.8 Forecasting costs and outputs with confidence for the duration of a price control is challenging. Uncertainty mechanisms allow us to adjust a network company's expenditure allowances in light of what happens during the price control period. Without these, we may provide ex-ante allowances to network companies that are higher or lower than required, which could result in consumers facing higher costs than necessary or fail to provide companies with the funding they need to maintain or develop their network. Uncertainty mechanisms allow network companies to finance efficient delivery, and ensure that they are not exposed to unreasonable risks outside of their control. However, we need to balance these forecasting risks with incentives for companies to conduct their activities efficiently within their price control allowances.

5.9 In RIIO-1, the change to the length of the price control from five years to eight years increased the level of uncertainty with regards to forecasting some elements of the price control. As such, a number of uncertainty mechanisms were introduced to deal with this.

5.10 In the draft IA, we acknowledged that, in theory, reverting back to a shorter price control (i.e. five years) might require fewer uncertainty mechanisms but that due to the uncertainty surrounding network activity in the future, we expected that defining allowances necessary for a range of different activities would be challenging. Consequently, we concluded that there might be a need to retain uncertainty mechanisms from RIIO-1 and potentially introduce new ones to address the high levels of uncertainty in RIIO-2.

5.11 For those reasons, under Draft Determinations proposals, approximately 50% of baseline totex across gas distribution and transmission sectors is linked to uncertainty mechanisms and PCDs to ensure companies are only paid for what

they deliver. Key areas of uncertainty include the pathway(s) GB may adopt to meet its decarbonisation objectives, and enhancing GB's network cyber resilience.

Introduction of a Return Adjustment Mechanism

5.12 We propose a symmetrical return adjustment mechanism with threshold levels 300bps either side of the baseline allowed return on equity, with an adjustment rate of 50% of returns above or below the relevant threshold. This mechanism will provide protection to consumers and investors in the event that network company returns are significantly higher or lower than anticipated at the time of setting the price control.[98]

Totex incentive rates

5.13 While lower totex incentive rates might reduce companies' incentives to seek efficiency and result in negative benefit for consumers, they could also protect against information asymmetry by reducing the scope for informational rents. This might be particularly the case in those sectors such as gas and electricity transmission where there is more limited comparability between companies.[99]

5.14 We also consider that a lower totex incentive rate might protect companies against changes in future costs and as such result in more certainty and lower risks.[100]

Risk and uncertainty in the context of Net Zero

5.15 The transition to a Net Zero future requires changes in how we operate network price controls. In February, we published Ofgem's Decarbonisation Action Plan setting out our intentions to make "the network price control regulatory regime more adaptive to deliver the most effective transition at lowest cost". To this end, the Draft Determinations propose to make the RIIO-2 price control flexible enough to inject the necessary funding, at the right time, to enable the achievement of Net Zero.

5.16 Where there is less certainty that a particular investment is needed, or the scope or cost of the investment is unclear, we propose to introduce a range of UMs to

[98] Please see RIIO-2 – Draft Determinations, Core Document, para 6.13.
[99] Please see Draft Impact Assessment, paragraphs 4.109-4.110.
[100] Please see RIIO-2 – Draft Determinations, Core Document, para 2.15.

enable the price control to flex when investment needs become clearer. The Net Zero re-opener would be available to GD and Transmission sectors and will allow changes in policy, as well as technological or market developments to be reflected in company allowances.

5.17 Its purpose is to introduce an increased level of adaptability into the RIIO-2 price control by providing a means to amend the price control in response to changes connected to the meeting of the Net Zero carbon target, which have an effect on the costs and outputs of network licensees.

5.18 We expect the Net Zero re-opener to allow for necessary amendments in relation to Net Zero initiatives within the RIIO-2 period, as opposed to waiting until the settlement of the subsequent price control, which could result in delaying the transition to Net Zero.

5.19 We consider it necessary to include the Net Zero re-opener in RIIO-2 as it will introduce a level of adaptability to Net Zero-related developments within the price controls. The heat policy reopener in Gas Distribution is also designed specifically to reflect within the price control changes within this policy area that may occur within RIIO-2.

Summary of risk and uncertainty

5.20 Under Draft Determinations proposals, we have proposed tools that reduce the overall variability of revenues and the risks related to company performance. We therefore consider that we have introduced a more balanced risk/reward profile than has been observed in RIIO-1. Companies will face lower risks under Draft Determinations proposals relative to the counterfactual and their scope to earn rewards above the baseline allowed return on equity through factors outside of a company's control or due to information asymmetries is likely to be more limited as well.

6. Summary and conclusions

6.1 The current RIIO-1 network price controls for electricity and gas transmission, and gas distribution companies end in March 2021. A new set of price controls are required to be in place for the start of the next price control period on 1 April 2021. We decided in May 2019 in the SSMD, supported by evidence discussed in the draft Impact Assessment, to use option 3, as defined in the draft IA, for regulating the gas and electricity transmission and gas distribution network companies in the next regulatory period.

6.2 We have updated the analysis presented in the draft IA to reflect actual values and approaches, as proposed in the Draft Determinations relative to assumptions and approaches we would have used under the counterfactual. Specifically our analysis has taken into account:

- the submission of business plans by network companies and the proposed revenue allowances as set out in Draft determination documents;
- Draft Determinations proposals relating to changes to incentives, eg number and types of outputs and totex incentive rates;
- new areas of analysis, reflecting changes to methodologies, which have been applied at Draft Determinations such as depreciation of gas transmission networks, adjustments to on-going and benchmarking efficiency;
- external developments such as government targets for Net Zero and new requirements as set out in Ofgem's updated IA Guidance.

6.3 In updating the IA for the factors described above, we have followed the same approach as in the draft IA by measuring the relative impact of our Draft Determination proposals against the counterfactual. We set out the counterfactual in our draft IA as the continuation of the RIIO-1 framework, with no material changes to the tools used or overall decisions made.

6.4 We present in the table below our updated results from a partial quantification of some elements of our Draft Determinations proposals compared to the counterfactual. In the table, we also present, where there have been changes compared to the draft IA, an updated qualitative assessment.

6.5 We present net benefit to consumers including and excluding the switch to CPIH and depreciation of gas transmission network assets. These changes result in reduced benefits to consumers within the next regulatory period but are value-neutral to both consumers and network companies in the long-run (ie consumers would not be either worse off or better off).

6.6 We note that most of the impacts presented in the table are a direct transfer from companies to consumers. The largest impact on consumers would arise from changes to the cost of equity.

6.7 We acknowledge that our estimate, particularly for the totex incentive rate, is indicative as there is some uncertainty around how companies would respond in practise to the reduction of the rate and we present three different cases. Lower incentives might reduce network companies' drive to seek efficiency cost savings and lead to less innovation in output delivery.

6.8 Compared to the draft IA, the quantified impacts now include changes to some of the methodologies used for estimating totex expenditure – ie ongoing efficiency and benchmarking efficiency. These changes result in a net benefit to consumers from reduced totex allowances.

6.9 Furthermore we note that our estimates of impacts from totex incentive rate, ongoing and benchmarking efficiency disregard the slow money component of totex, which is added to the Regulatory Asset Base of network companies. As such they should be considered an overestimate.

6.10 Most of the figures presented in the table refer to the gas and electricity transmission and gas distribution sectors. However, for cost of equity and switch to CPIH, financial impacts for the ESO are included in the totals. The ESO only accounts for a small proportion of the total NPV presented.

6.11 Compared to the draft IA, our estimate of total expected quantified benefit for consumers is lower. This is the result of: a) reporting figures in 2018/19 price rather than 2021/22 prices as in the draft IA; and b) updated analysis using actual values and approaches as proposed in the Draft Determinations; c) including new areas of analysis such as depreciation of gas network assets which reduce the NPV in the regulatory period.

6.12 Overall, we consider that our Draft Determination proposals, compared to the RIIO-1 counterfactual, offer lower returns and risks to network companies but still provide incentives for cost efficiency whilst allowing network companies to finance themselves.

6.13 Further, we note that the symmetric nature of RAMs means that both consumers and network companies are protected against material deviations from ex ante expectations, forecast and benchmarking errors.

Table 30: Impact on consumers of Draft Determinations proposals compared to counterfactual - quantified & non-quantified impacts, NPV of consumer benefit (£m 2018/19, discounted)

Area of package	Mechanism	Low	Medium	High
Changes to financial parameters	Return on equity	2,784	2,784	2,784
		Network companies will receive less remuneration for equity investment. Key credit ratios are expected to be broadly similar or slightly improved on a notional company basis.		
	Switch to CPIH	-1,433	-1,433	-1,433
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
	Depreciation of gas transmission network assets	-468	-468	-468
		This change will be value-neutral to both investors and consumers in the long-term (consumers will be neither worse off nor better off), but does affect the timing of repayment of the RAV. This means the consumer benefit is negative within the next regulatory period.		
Changes to incentives	Totex Incentive Mechanism and informational tools	48	73	97
		Unclear - consumers might not benefit from a change in informational tools and lower incentive rates as a degree of informational asymmetry persists over time.		
	Output Delivery Incentives	Consumers might benefit if combination of recalibrated targets and narrower performance ranges does not affect delivery of common outputs. Potential benefit from delivery of bespoke outputs. However, because of limited comparability and historical information they might be paying more needed.		
	Price control deliverables	Consumers might benefit as they only fund activities that are delivered		
	Ongoing efficiency	173	173	173
	Benchmarking efficiency	170	170	170
Changes to other elements	Return adjustment mechanisms	**0**	**0**	**0**
		RAMs are unlikely to be triggered under all scenarios considered.		
	Innovation funding	No change compared to counterfactual as proposed innovation funding is broadly in line with that made available in RIIO-1.		
	Competition	Uncertain- likely to result in consumer benefit if projects are approved.		
Administration costs		Some additional administration and resource costs for the regulator and companies due to new tools introduced but no change compared to counterfactual in relation to uncertainty mechanisms. These would be passed onto consumers.		
Total quantified impacts		1,274	1,299	1,323
Total, not including switch to CPIH and depreciation of gas assets		3,175	3,200	3,224

Next steps

6.14 We will review and where necessary, update this IA at Final Determinations in December 2020.

Appendices

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Appendix 1 - Cost of debt

In this appendix we set out our analysis of the total impacts arising from a reduction to the cost of capital. These include the lower return on equity already described, but also a forecast of declining debt costs (as debt allowances are indexed).

The cost of debt for the RIIO-2 period is lower due to the lower level of interest rates expected in the RIIO-2 period over the RIIO-1 period. In addition the levels of gearing for the notional company are lower. However we have also proposed changes to the methodology for the calculation of the cost of debt allowance and the impacts of these changes are not separately presented here.[101]

In RIIO-1 the cost of debt allowance was calculated using a 10 year trailing average of the iBoxx A and BBB rated indices. For RIIO-2 Draft Determinations Ofgem has proposed to use a 10-14 year trailing average of the iBoxx Utilities 10 year plus bond index.[102] The counterfactual is to apply the average RIIO-1 cost of debt to the RIIO-2 period.

Table 31: Impact of changes in the cost of debt for RIIO-2 companies revenues over a five year price control (£m 2018/19, discounted)

Sector	£m
Gas Transmission	-226
Gas Distribution	-828
Electricity Transmission	-677
ESO[103]	-27
Total impact	-1,757

We expect the costs of network companies' debt and their cost of debt allowances to decline because yields have fallen in recent years so maturing historical debt can be refinanced at lower rates and the trailing averages used for allowances reflect this.

[101] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf para 2.6 p 13.
[102] Ibid Para 2.6 p 13 and after.
[103] For the ESO over the five year RIIO-2 period.

Table 32: Cost of debt during RIIO-1 and in the next regulatory period (RIIO-2) under RPI and CPIH for the different sub sectors

For Electricity Transmission

	RPI	CPIH
RIIO-1 Average	2.03%	2.86%
FY 2019/20	1.39%	2.22%
RIIO-2 Average	0.89%	1.71%

For Gas Distribution & Transmission

	RPI	CPIH
RIIO-1 Average	2.18%	3.01%
FY 2019/20	1.58%	2.41%
RIIO-2 Average	0.92%	1.74%

For ESO

	RPI	CPIH
RIIO-1 Average	2.18%	3.01%
FY 2019/20	1.14%	1.96%
RIIO-2 Average	-0.86%	-0.05%

The table below sets out, in NPV terms, estimates of the total impacts arising from the changes in the cost of debt and cost of equity and the total cost of capital versus the counterfactual.

Table 33: : Net present value arising from changes to the cost of capital in RIIO-2 (£, 2018/19) vs counterfactual

Component of cost of capital	NPV
	£m
Return on equity	2,784
Cost of debt	1,757
Total cost of capital	4,541

Appendix 2 - Conversion of figures presented in draft IA in 2018/19 price base

In the tables presented below we convert quantified impacts presented in the draft IA published in 2021/22 CPIH (discounted) prices to 2018/19 prices (discounted)

Table 34: Preferred option – Monetised Impacts (£m) p. 6 of Draft IA

Business Impact Target Qualifying Provision	Non Qualifying
Business Impact Target	Not Applicable
Net Benefit to GB Consumers Direct consumer Net Present Value (NPV) figures represent the direct impact on energy consumers compared to counterfactual (under option 3, central case) over the next price control period	Direct benefits excluding switch to CPIH: **£3,747m** (£1,859m to £4,797m) Direct benefits including switch to CPIH: **£1,763m** (-£104m to £3,148m)
Wider Benefits/Costs for Society Direct wider impacts include the direct revenue impact on network companies and administrative costs for companies compared to counterfactual (under option 3, central case) over the next price control period	Direct only excluding switch to CPIH: **-£2,316m** Direct only including switch to CPIH: **-£883m**
Net impact The overall net effect includes the net impact on consumers and companies compared to counterfactual (under option 3, central case) over the next price control period	Excluding switch to CPIH: **-£530m** (-£805m to -£286m) Including switch to CPIH: **-£530m** (-£805m to -£286m)

Table 35: Impact on consumers of option 3 compared to counterfactual - quantified and non-quantified impacts, net present value of consumer benefit (£m 2018/19) (Table 1 on p. 10 of Draft IA)

Area of package	Mechanism	Option 3	Option 3 range	
			Low	High
Changes to financial parameters	Return on equity	**3,256**	2,784	2,784
	Switch to CPIH	**-1,984**	-1,963	-1,991

Area of package	Mechanism	Option 3	Option 3 range	
			Low	High
Changes to incentives	Totex Incentive Mechanism and informational tools	**214**	-643	981
	Output Delivery Incentives	**277**	20	611
Changes to other elements	Return adjustment mechanisms	**0**	**0**	**0**
Total quantified impacts		**1,763**	-104	3,148
Total, not including switch to CPIH		**3,747**	1,859	5,139

Table 36: Impacts on network companies resulting from option 3 across all sectors (excluding electricity distribution) over a five-year price control – quantified and non-quantified impacts (£m 2018/19), discounted (Table 6 on p. 40 of Draft IA)

Area of package	Mechanism	Option 3	Option 3 range	
			Low	High
Changes to financial parameters	Return on equity	**-3,256**	-2,482	-3,546
	Switch to CPIH	**1,984**	1,963	1,991
Changes to incentives	Totex Incentive Mechanism and informational tools	**-744**	-162	-1,269
	Output Delivery Incentives	**-277**	-20	-611
Changes to other elements	Return adjustment mechanisms	**0**	**0**	**0**
Total quantified impacts		**-2,293**	-700	-3,434
Total, not including switch to CPIH		**-4,277**	-2,664	-5,425

Table 37: Impact on network companies' revenues of lower allowed return on equity under central/low/high cases over RIIO-2 (£m 2018/19, discounted) (Table 10 on p. 46 of Draft IA)

	Option 3 (low)	Option 3 (central)	Option 3 (high)
Electricity Transmission	-1,434	-1,790	-1,923
Gas Transmission	-309	-412	-451
Gas distribution	-739	-9771,054	-1,173
Total	**-2,482**	**-3,256**	**-3,546**

Table 38: Impacts over RIIO-2 on company revenues of indexing RAV to CPIH cases (£m 2018/19, discounted) (Table 12 on p. 48 of Draft IA)

	Option 3 (low)	Option 3 (central)	Option 3 (high)
Electricity Transmission	900	909	912
Gas Transmission	278	281	281
Gas distribution	786	795	798
Total	**1,963**	**1,984**	**1,991**

Table 39: Impact on network companies' revenues of changes to financial parameters over the next five-year price control (£m 2018/19, discounted) (Table 13 on p. 49 of Draft IA)

	Option 3 (low)	Option 3 (central)	Option 3 (high)
Return on equity	-2,482	-3,256	-3,546
Switch to CPIH	1,963	1,984	1,991
Total	**-519**	**-1,272**	**-1,555**

Table 40: Impact on network companies' revenues under a range of totex incentive rates for option 3, over a five-year price control (£m 2018/19, discounted) (Table 15 on p. 54 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Gas Transmission	43.8	17.7	-8.5
Gas distribution	-659.1	-420.9	-182.7
Electricity Transmission	-366.3	-168.2	29.8
Total impact on revenues	**-981.6**	**-571.5**	**-161.3**

Table 41: Impact on company revenues resulting from first and second order effects for all sectors (electricity transmission, gas transmission and gas distribution), over a five-year price control (£m 2018/19, discounted) (Table 16 on p. 55 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	-981.6	-571.5	-161.3
Mapping 2:1	-1,124.9	-743.5	-212.7
Mapping 1:1	-1,268.3	-915.5	-264.1

Table 42: Impact on NGGT revenues (gas transmission) resulting from first and second order effects, over a five-year price control (£m 2018/19, discounted) (Table 17 on p. 55 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	43.8	17.7	-8.5
Mapping 2:1	36.4	11.2	-3.6
Mapping 1:1	29.0	4.8	1.0

Table 43: Impact on company revenues (gas distribution) resulting from first and second order effects over a five-year price control (£m 2018/19, discounted) (Table 18 on p. 56 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	-659.1	-420.9	-182.7
Mapping 2:1	-737.2	-528.8	-254.8
Mapping 1:1	-815.1	-636.7	-326.8

Table 44: Impact on company revenues (electricity transmission) resulting from first and second order effects (green cell represents our central estimate), over a five-year price control (£m 2018/19, discounted) (Table 19 on p. 56 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	-366.3	-168.2	29.8
Mapping 2:1	-424.2	-225.9	45.6
Mapping 1:1	-482.2	-283.5	61.5

Table 45: Summary of expected impacts from changes to totex incentive rate and informational tools under option 3 over a five-year price control (£m 2018/19, discounted) (Table 20 on p. 59 of Draft IA)

	Option 3 (low case)	Option 3 (central case)	Option 3 (high case)
Changes to totex incentive rate – central case (first and second order effects only)	-161.3	-743.5	-1,268.3

Table 46: Impacts of ODIs under option 3 – annual (£m 2018/19) (Table 24 on p. 64 of Draft IA)

Sector	RIIO-1 average annual revenues (to date)	Option 3 annual revenues (low case)	Option 3 annual revenues (central case)	Option 3 annual revenues (high case)
Gas Distribution	25.7	-5.8	4.7	26.5
Gas Transmission	29.1	-23.4	12.0	27.5
Electricity Transmission	29.7	-17.1	8.6	26.1
Total	84.4	-46.4	25.1	80.1
Total (five-year- price control period, discounted)	394.4	-217.0	117.4	374.2

Table 47: Impact of ODIs on company revenues under option 3 relative to the counterfactual over a five-year price control (£m 2018/19) (Table 25 on p. 65 of Draft IA)

	Impact of option 3 relative to RIIO-1 counterfactual (low case)	Impact of option 3 relative to RIIO-1 counterfactual (central case)	Impact of option 3 relative to RIIO-1 counterfactual (high case)
Cross-sector annual impact of option 3 relative to counterfactual	-122.3	-55.4	-4.0
Total difference in cross-sector revenues over five-year price control period	-611.4	-277.0	-20.2

Table 48: Impact of ODIs and PCDs on company revenues under option 3 (central case) over a five-year price control (£m 2018/19) (Table 26 on p. 67 of Draft IA)

	Option 3
Impact of changes to ODIs – central case	-277.0

Table 49: Impacts on consumers from 2021/22 to 2025/26 (£m 2018/19) (Table 34 on p. 77 of Draft IA)

Area of package	Mechanism	Option 3	Option 3 range	
			Low	High
Changes to financial parameters	Return on equity	**3,256**	2,482	3,546
	Switch to CPIH	**-1,984**	-1,963	-1,991
Changes to incentives	Totex Incentive Mechanism and informational tools	**214**	-643	981
	Output Delivery Incentives	**277**	20	611
Changes to other elements	Return adjustment mechanisms	**0**	**0**	**0**
Total quantified impacts		**1,763**	-104	3,148
Total, not including switch to CPIH		**3,747**	1,859	5,139

Table 50: Net present value of consumer benefit from changes to the cost of equity over a five-year price control (£m 2018/19, discounted) (Table 35 on p. 79 of Draft IA)

	Option 3 (low)	Option 3 (central)	Option 3 (high
ET, GT, and GD	2,482	3,256	3,546

Table 51: Net present value of consumer benefit indexation of the RAV and returns to CPIH, over a five-year price control (£m 2018/19, discounted) (Table 36 on p. 79 of Draft IA)

	Option 3 (low)	Option 3 (central)	Option 3 (high
ET, GT, and GD	-1,963	-1,984	-1,991

Table 52: Net present value of consumer benefit resulting from first order effect (green cell represents our central case), over a five-year price control (£m 2018/19, discounted) (Table 37 on p. 80 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Total impact on consumer share of underspend	981.6	571.5	161.3

Table 53: Net present value of consumer benefit resulting from first and second order effects (green cell represents our central case) over a five-year price control (£m 2018/19, discounted) (Table 38 on p. 81 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	981.6	571.5	161.3
Mapping 2:1	169.3	214.3	109.9
Mapping 1:1	-642.9	-142.9	58.6

Table 54: Net present value of consumer benefit attributed to gas transmission (NGGT) resulting from first and second order effects (green cell represents our

central case) over a five-year price control (£m 2018/19, discounted) (Table 39 on p. 82 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	-43.8	-17.7	8.5
Mapping 2:1	-85.8	-31.2	13.1
Mapping 1:1	-127.8	-44.6	17.9

Table 55: Net present value of consumer benefit attributed to gas distribution resulting from first and second order effects (green cell represents our central case) over a five-year price control (£m 2018/19, discounted) (Table 40 on p. 82 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	659.1	420.9	182.7
Mapping 2:1	217.4	197.0	110.7
Mapping 1:1	-224.3	-27.1	38.7

Table 56: Net present value of consumer benefit attributed to electricity transmission resulting from first and second order effects (green cell represents our central case) over a five-year price control (£m 2018/19, discounted) (Table 41 on p. 83 of Draft IA)

	Totex incentive rate = 15%	Totex incentive rate = 32.5%	Totex incentive rate = 50%
Mapping 1:0	366.3	168.2	-29.8
Mapping 2:1	37.7	48.5	-13.9
Mapping 1:1	-290.8	-71.2	2.0

Table 57: Net present value of consumer benefit resulting from first and second order effects with a totex incentive rate of 32.5% and assumed mapping of 2:1 over a five-year price control (£m 2018/19) (Table 43 on p. 85 of Draft IA)

	Option 3 (central case)
Changes to totex incentive rate – central case (first and second order effect only)	214.3

Table 58: Net present value of consumer benefit from ODIs over a five-year price control (£m 2018/19) (Table 44 on p. 86 of Draft IA)

Sector	Impact of option 3 relative to RIIO-1 counterfactual (low case)	Impact of option 3 relative to RIIO-1 counterfactual (central case)	Impact of option 3 relative to RIIO-1 counterfactual (high case)
Total (annual)	4.0	55.4	122.3
Consumer benefit over five-year price control period	20.2	277.0	611.4

Table 59: Net present value of consumer benefit (reduction in network companies' revenues) from changes to outputs under central case over a five-year price control (£m 2018/19) (Table 45 on p. 88 of Draft IA)

Sector	Option 3 (low)	Option 3 (central)	Option 3 (high)
Total impact of change in policy – central case	20.2	277.0	611.4

Table 60: Impact on consumers for option 3 compared to counterfactual - quantified and non- quantified impacts. Net present value of consumer benefit (£m 2018/19) (Table 51 on p. 108 of Draft IA)

Area of package	Mechanism	Option 3	Option 3 range	
			Low	High
Changes to financial parameters	Return on equity	**3,256**	2,482	3,546
	Switch to CPIH	**-1,984**	-1,963	-1,991
Changes to incentives	Totex Incentive Mechanism and informational tools	**214**	-643	981
	Output Delivery Incentives	**277**	20	611
Changes to other elements	Return adjustment mechanisms	**0**	**0**	**0**
Total quantified impacts		**1,763**	-104	3,148
Total, not including switch to CPIH		**3,747**	1,859	5,139

Table 61: Net present value and associated bill impacts arising from changes to the cost of capital from RIIO-1 for a dual fuel average consumer (£m 2018/19) using RIIO-1 average cost of debt (Table 53 on p. 121 of Draft IA)

	Transmission and Gas Distribution		Including Electricity Distribution	
	Net Present Value	Average Bill Impact	Net Present Value	Average Bill Impact
	£ million	£/year	£ million	£/year
Return on equity	3,256	13	4,381	16
Cost of debt	2,204	10	2,843	12
Total cost of capital	5,460	23	7,226	29

Table 62: Net Present Value (NPV) and associated bill impacts from changes to the cost of capital from RIIO-1 for a dual fuel domestic consumer (£m 2018/19) using RIIO-1 (2018/19) cost of debt rates (Table 54 on p. 122 of Draft IA)

	Transmission and Gas Distribution		Including Electricity Distribution	
	Net Present Value	Average Bill Impact	Net Present Value	Average Bill Impact
	£ million	£/year	£ million	£/year
Return on equity	3,256	13	4,381	16
Cost of debt	1,074	5	1,613	8
Total cost of capital	4,329	18	5,994	24